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# A review of Ghana's value-added tax (VAT) system

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# Preface

This report was prepared under the auspices of the Centre for Tax Analysis in Developing Countries (TaxDev), which aims to promote more effective tax policymaking in low- and middle-income countries through research, applied analysis, and partnerships with policymakers. The report is the product of a collaboration between the Institute for Fiscal Studies (IFS) and the Tax Policy Unit in the Ministry of Finance (MoF) of Ghana, with support from the Ghana Revenue Authority (Domestic Tax Revenue Division).

The views expressed in this report are, however, those of the authors and do not necessarily reflect the views of the funders or of the other individuals or institutions mentioned here, including IFS, which has no corporate views, the MoF and the Ghana Revenue Authority (GRA).

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# List of Abbreviations

| | |
|---|---|
| ATAF | African Tax Administration Forum |
| AUC | African Union Commission |
| B2B | Business-to-Business |
| B2C | Business-to-Consumer |
| CHL | COVID-19 Health Recovery Levy |
| CIF | Cost, Insurance and Freight |
| EBMs | Electronic Billing Machines |
| ETR | Effective Tax Rate |
| EY | Ernst & Young |
| GCMS | Ghana Customs Management System |
| GDP | Gross Domestic Product |
| GETFL | Ghana Education Trust Fund Levy |
| GETFund | Ghana Education Trust Fund |
| GHATAX | A microsimulation module for Ghana |
| GHS | Ghana cedis |
| GITMIS | Ghana Integrated Tax Management and Information System |
| GLSS | Ghana Living Standards Survey |
| GRA | Ghana Revenue Authority |
| GSS | Ghana Statistical Service |
| IBES | Integrated Business Establishment Survey |
| IMF | International Monetary Fund |
| LMICs | Low- and Middle-Income Countries |
| LTO | Large Taxpayer Office |
| MoF | Ministry of Finance |
| MTOs | Medium Taxpayer Offices |
| NHIL | National Health Insurance Levy |

| | |
|---|---|
| OECD | Organisation for Economic Co-operation and Development |
| PPP | Purchasing Power Parity |
| PwC | Price Waterhouse Coopers |
| RACE | Revenue Assurance and Compliance Enforcement |
| RGD | Registrar General's Department |
| SAM | Social Accounting Matrix |
| SSA | Sub-Saharan Africa |
| STOs | Small Taxpayer Offices |
| TaxDev | Centre for Tax Analysis in Developing Countries |
| TIN | Taxpayer Identification Number |
| trips™ | Total Revenue Processing System |
| TSC | Taxpayer Service Centre |
| USD | United States Dollars |
| VAT | Value-Added Tax |
| VFRS | VAT Flat Rate Scheme |

# Executive Summary

In recent decades, the value-added tax (VAT) has become widespread around the world, and it is a crucial source of tax revenue – especially in low- and middle-income countries (LMICs), where personal income tax revenues are typically low. The popularity of VAT rests on a number of key design features which are intended to engender production and revenue efficiency.

Ghana's VAT system is now close to two and a half decades old; over this period several significant modifications in the design of the system have occurred. This report undertakes a comprehensive review of the system with a view to making recommendations for future policy action. Below are the key findings from this exercise. The report's authors have shared potential recommendations and policy options with the Government of Ghana.

## The principles of VAT design

1 A good VAT system should minimise welfare losses, compliance and administration costs, be both transparent and fair in terms of procedure, and be non-discriminatory. To achieve these objectives, the tax system must satisfy three main principles. These are: neutrality (treating similar activities similarly unless there is good reason not to), simplicity (minimising the number of rules and the complexity of procedures), and stability (avoiding unnecessary and regular changes to the rules).

2 There can, however, be reasons for governments to vary the rates of VAT that are charged on different goods and services, for example if it is easier for taxpayers to conceal expenditure on certain goods and services from the tax authorities, or because rate differentiation allows them to better target support at low-income households than via other means. But variation in VAT rates also causes a range of problems, including distortions to consumption and production decisions, greater administration and compliance costs, complex legal decisions, and lobbying for further extensions of preferential rates. The bar for agreeing to apply different rates to different goods and services should therefore be set high, especially if the main reason is to help low-income households or encourage consumption of a good; other measures (such as direct cash transfers) are usually much better targeted.

3 Exemptions, where no VAT is charged on a product, but, in addition, the producer of the product cannot reclaim any VAT paid on inputs used in production (unlike for goods subject to a positive or zero rate for VAT), are even more problematic. In particular, they discourage producers of such products from buying inputs from other businesses, and instead incentivise them to produce them less efficiently themselves, to avoid an unreclaimable VAT bill. Exemptions also increase the potential and incentive for tax evasion: because businesses can no longer reclaim VAT they have an incentive to collude with their suppliers to hide transactions from the tax authorities. They should therefore be avoided unless there are technical reasons that mean it is difficult to calculate 'value added', such as in the case of public services and financial services where no explicit fees are charged. For similar reasons, turnover taxes or levies that do not allow for reclaiming input VAT are also undesirable.

4 An exemption that may make sense from an administration and compliance perspective is one that is targeted at the smallest businesses. By requiring businesses to register for VAT only when their turnover exceeds a certain threshold, the cost of complying with and administering the VAT for these businesses can be avoided: these costs would otherwise likely be very high relative to the revenue that could have been collected. For similar reasons, it can make sense to operate simplified turnover taxes for small businesses, either just above or just below the VAT registration threshold. Again, these taxes can reduce administration and compliance costs, while limiting them to small businesses avoids the distortions to production associated with the taxation of turnover becoming too large and widespread. Tax rates for simplified schemes can be set to approximate the average net tax rate under the VAT to minimise distortions to competition.

5 Like most taxes, the determination and remittance of most VAT liabilities depend on self-assessment. This means that it is important to encourage voluntary compliance with the VAT system. The registration process should be straightforward, but at the same time collect data on basic business characteristics (such as sector, size and location) to aid subsequent compliance activities. It should also be made easy to file and pay taxes – for example, by allowing this to be done online and, at least during an appropriate transition phase, also manually. Benefits of e-filing and e-payments can be maximised if they are introduced together, and if they link up with other hardware and software used by taxpayers, such as electronic fiscal devices and tax and invoicing software.

6 One of the potential benefits of the VAT is what is termed its self-enforcing property: in theory this means that it is difficult for collusive tax evasion to take place for business-to-business (B2B) transactions because while the seller wants to minimise the reported

transaction value (to reduce its output VAT), the buyer wants to maximise the reported value (to increase its input VAT). However, if data from sellers and buyers is not cross-checked, even where they are collected, businesses could individually under- and overstate transaction values, reducing revenue. In addition, consumers and businesses do have an incentive to collude to avoid VAT via 'cash-in-hand' arrangements, as consumers cannot reclaim the VAT they pay. This can be tackled by rewarding consumers if they request a VAT receipt and report the transaction to the authorities – for example, via lotteries. Audits also play an important role in identifying VAT fraud, and audit programmes should include both targeted audits focused on businesses where the revenue risks are greatest, and random audits, which allow an assessment of the overall level of fraud.

7 VAT withholding, whereby buyers rather than sellers are responsible for remitting VAT to the tax authorities, can help increase compliance where certain large organisations (e.g., government departments, state-owned enterprises and financial institutions) have higher rates of tax compliance than the businesses they buy from. However, if the withholding rate is set too high, it can create cash-flow problems for taxpayers from whom VAT is withheld. It can also lead to overpayment of tax if businesses fail to report the VAT withheld from them, and/or if VAT refunds are not paid by the revenue authority in practice.

8 VAT refunds are a key feature of the VAT system: businesses making large investments and exporting large shares of their output are likely to have more input VAT to reclaim than output VAT to charge. However, VAT refunds can also be subject to significant fraud, even in high-income countries, which means that it is important to have processes to verify the legitimacy of refund claims. To minimise the effects of the time taken for these processes on exporters and investors, 'fast-track' schemes can be operated for taxpayers with a history of tax compliance. Avoiding a proliferation of different tax rates and too high a withholding rate can also reduce the number of businesses requiring refunds.

# VAT policy in Ghana

9 Ghana's VAT system has evolved substantially over time. The basic features of the system legislated in 2013 align with standard international practice along a number of key dimensions (e.g., the destination principle, the invoice-credit system), but more recent reforms have departed from the standard principles of VAT system design.

10 The overall rate of VAT and associated taxes in Ghana has risen over time. This is in part because of the introduction of a number of levies which are often paid by the same taxpayers on similar tax bases as the VAT: the National Insurance Health Levy (NHIL); the Ghana Educational Trust Fund Levy (GETFL); and the COVID-19 Health Recovery Levy (CHL). The revenues from these levies are allocated towards the Government of Ghana's health, education and COVID-19 recovery objectives. Unlike VAT, inputs under the levies are unreclaimable. While Ghana's standard rate of VAT is low, when combined with the levies, it was one of the highest rates in Africa, even before the recent increases announced in the 2023 Budget.

11 Similar to many countries, VAT exemptions are long-standing and quite widespread in Ghana. Their specific rationales are not always clearly documented but likely reflect a combination of factors. The overall revenue cost of VAT exemptions is likely to be large, while the benefits are poorly targeted from a distributional perspective. For example, while modestly progressive overall when measured as a proportion of household consumption, the exemptions are worth much more in cash terms for richer households than for poorer households, and exemptions for transport services and fuels other than kerosene are actually regressive even in proportional terms.

12 Ghana's VAT registration threshold is well within the normal range observed around the world, though a lack of regular uprating means that the real value of the threshold has changed substantially over the years. However, voluntary registration appears to be common in Ghana, suggesting that the level of the threshold is not a binding consideration for a large number of companies.

13 The NHIL, GETFL and CHL are a significant departure from the core principles of VAT design because registered businesses cannot reclaim the levies paid on their input purchases, unlike the standard VAT. All else equal, this means that for a given rate, the levies raise more than a standard VAT would, but the lack of reclaimability creates tax cascading and possible incentives for businesses to change their behaviour to avoid taxes, including on B2B sales. Analysis of tax returns shows large reductions in the share of businesses reporting taxable supplies and inputs immediately after the reform, suggesting negative impacts on tax compliance and/or economic activity, offsetting at least part of the additional revenue that would otherwise be raised.

14 The restriction of the VAT Flat Rate Scheme (VFRS) – a turnover tax scheme previously available to *all* wholesalers and retailers – to small taxpayers engaged in retail activities in the 2023 Budget is a welcome move. The regime is simpler for small taxpayers and the Ghana Revenue Authority (GRA), and prevents the possibility of refund claims. For

larger taxpayers, though, the reduction in administration and compliance costs associated with the VFRS was likely outweighed by distortions resulting from the unreclaimability of VAT paid on input purchases, and differences in effective tax rates between VFRS and standard VAT taxpayers. One issue that was not fully solved by restricting the VFRS to small taxpayers is the fact that many businesses appear to dual-file for the VFRS and the standard VAT in the same month, or to switch back and forth in alternate months. If the goal of the VFRS is to reduce compliance costs for (small) taxpayers, the desire or need to dual-file is likely to be counterproductive.

15 Based on the statutory rules of the system, the distributional burden of VAT in Ghana is progressive, though perhaps less so than other types of taxation. In reality, the progressivity of the VAT system is likely strengthened by widespread informality, as international evidence suggests that informal purchases are much more concentrated among poorer households.

## VAT administration in Ghana

16 The number of registered VAT taxpayers per capita in Ghana is comparable with other African countries. However, in the last 5 years there has been limited growth in the number of standard VAT taxpayers, and survey data suggest that there may still be a large population of potential VAT taxpayers who are unregistered.

17 Among registered taxpayers, 60–70% consistently file a return each month, and this has been stable over time. The share of taxpayers that file a nil return has been increasing gradually in recent years, however, reaching close to 30% of all filed returns in 2022, up from an average of 20% in 2014. This trend requires further exploration.

18 Audits of VAT taxpayers fall under the GRA's broader audit programme, which prioritises focused, comprehensive audits. Though these audits assess significant aggregate VAT liabilities (more than GHS 0.8 billion in 2019), only 8–11% of these liabilities are actually recovered each year, and there is no systematic evaluation of audit effectiveness.

19 VAT withholding agents paid GHS 190 million in 2020, or slightly over 3% of domestic VAT revenues. VAT withholding may bring compliance benefits, but it also increases the complexity of VAT administration, including by increasing the likelihood that taxpayers enter a credit position, all else being equal. Analysis of tax returns suggests that businesses subject to withholding are 4–5 percentage points more likely to be in a credit position.

20 VAT refunds peaked at 13% of net VAT revenue in 2016 and 2017 but have since fallen to 5–7% in each year from 2019 to 2021. Compared to other African countries, this level of refunds is relatively low. Both macroeconomic projections and comparisons with administrative tax data suggest that there may be large amounts of legitimate VAT refunds which are not being paid to taxpayers.

21 Audits in the refund system are targeted towards businesses requesting refunds that do not have a history of requesting refunds, but there are limited audits at the post-payment stage and towards businesses which are accumulating large credits without submitting a refund request.

22 A number of ongoing initiatives being implemented by the GRA seek to improve the availability and quality of data for tax administration. These have the potential to significantly improve enforcement efforts over time. Fragmented data across offices, incomplete digitised tax return records, the absence of digital invoices, and low utilisation of data matching, including with third-party data sources, have historically posed challenges. Sufficient human resources will be crucial to fully exploit new, larger and more disaggregated data sources as they become available.

# VAT revenue performance and drivers in Ghana

23 Since the mid-2000s, tax revenues in Ghana from VAT and the levies which operate in parallel (the NHIL, GETFL and CHL) have totalled between 3% and 3.5% of GDP in every year until 2021, when they reached 3.7%. This level of revenue is lower than in most other African countries in spite of the relatively high combined VAT and levies rate.

24 The importance of VAT in these collection figures has declined substantially. Gross VAT revenues in 2021 amounted to 2.6% of GDP while the levies collectively brought in gross revenues equivalent to 1.2%, with VAT refunds at 0.2% of GDP. In contrast, gross VAT in 2017 amounted to 3.2% of GDP, with the then-reclaimable NHIL accounting for another 0.5%.

25 Where these revenues are collected has changed substantially too. While in every year from 2000 to 2018 more VAT and levy revenue was collected at customs than domestically, the reverse was true in 2019, 2020 and 2021. Domestic VAT and levy collections grew from 1.6% of GDP in 2017 to 2.3% of GDP in 2021, while external customs collections fell from 1.9% to 1.5% of GDP in the same period.

26 Domestic VAT and levy collections are highly concentrated, though this is not unusual internationally. The largest 500 taxpayers accounted for 80% of revenues in 2020, and the Large Taxpayer Office collected nearly two-thirds (64%). Notable changes in sectoral revenue collections include a sudden drop in wholesale and retail revenues in 2019 and a turnaround in collections from manufacturing businesses in the same year.

27 Relatively slower consumption growth and more rapid export growth – which are both features of Ghana's macroeconomic performance in recent years – make growing VAT revenues relative to national output more challenging. However, after accounting for changes in the VAT rate, VAT measured as a share of consumption has not improved either.

28 Businesses that switched from the standard VAT scheme to VFRS saw slightly slower tax revenue growth in subsequent months. Understanding this effect is complicated by the fact that many businesses dual-file, and temporarily switch into the VFRS. The 2018 reforms to the GETFL and NHIL which made them unreclaimable likely raised additional revenue in 2019. However, reductions in reported sales offset much of the mechanical increase in revenues as a result of the unreclaimable nature of these levies, and the medium-term revenue effects of such policies are uncertain.

29 The 2019 discount policy for imports (which reduced the values being used for the calculation of import taxes, including import VAT) led to a large drop in VAT and levies revenue collected at customs – perhaps as much as GHS 1.6 billion in 2019. While there may have been some offsetting effect through reduced claims of input VAT on domestic VAT returns, the total revenue effect of the reform appears to be negative, and helps to reconcile the sharp decline in import VAT collections observed in that year. The ending of this policy should therefore boost import VAT (and other tax revenues) going forward.

30 The share of VAT revenue remitted by withholding agents has been small at 3–5% of domestic collections in 2018–2020, and aggregate claimed withholding credits in tax returns across these years are comparable to the remitted total. However, suppliers that report having tax withheld in a larger number of months do report higher tax liabilities and sales in months when they claim withholding credits, which may be suggestive of a positive compliance effect.

# 1. Introduction

The value-added tax (VAT) exists in more than 170 countries and territories around the world, including Ghana (see OECD, 2020). Ghana adopted VAT in 1998 after the first attempt to introduce it in 1995 was unsuccessful. Since its introduction, the VAT system has witnessed a number of fundamental changes in its design, including the introduction of the VAT flat rate system (VFRS) for retailers and wholesalers (recently restricted to small retail businesses); the conversion of the Ghana Education Trust Fund Levy (GETFL) and the National Health Insurance Levy (NHIL) into straight levies in 2018, under which, unlike standard VAT, payments cannot be reclaimed by registered businesses; and the introduction of the similarly unreclaimable temporary COVID-19 Health Recovery Levy (CHL) in 2021. The administration of the VAT system is also in the midst of change, with the roll-out of digitalisation of payments, filing and invoicing.

At the same time, revenues from VAT have been somewhat disappointing. VAT revenues as a share of total tax revenues have declined from a third in 2001 to less than 20% in 2021. VAT revenues have been relatively stagnant as a share of GDP since 2004, fluctuating between 3.0% and 3.5%, contrasting with the experience of other low- and middle-income countries (LMICs), where rising GDP has been associated with rising tax-to-GDP ratios. This revenue underperformance is particularly concerning, given Ghana's overall fiscal sustainability challenges.

This report conducts a comprehensive review of the VAT and levies system in Ghana, and has three goals: first, to analyse the recent reforms to VAT design and administration in Ghana; second, to understand the drivers of recent revenue underperformance; and third, to identify reform packages that can raise revenue while also moving closer to optimal policy design and reducing administrative burdens.

The rest of this report is structured as follows. Section 2 starts by providing a detailed review of the literature on the principles of VAT policy design and administration. This sets out what an ideal VAT in a middle-income country might look like, and serves as a benchmark for the remaining sections.

Section 3 documents and evaluates the design of the VAT and levies system in Ghana. Policy design is important because the goal of taxation is not to raise revenue by any possible

means, but to raise revenue in a way that is efficient (by not reducing the size of the economy through distorting businesses' and consumers' decisions) and equitable (by ensuring tax payments are related to ability to pay, while ensuring sufficient revenues are raised to be redistributed via spending on infrastructure, public services and cash transfers). Designing a VAT requires a number of policy choices beyond the headline rate, such as determining where to set thresholds, which goods and services are subject to reduced or zero rates or exemptions, and whether and how to develop alternative 'simplified' schemes. These choices will affect efficiency and equity.

Section 4 discusses the administration of VAT in Ghana. Good tax administration encourages voluntary compliance and minimises the compliance burden of VAT, which tends to be most significant for small taxpayers. In a high evasion context, effective tax administration is also crucial to identify tax evaders and minimise opportunities for evasion.

Section 5 attempts to identify why revenue performance has been relatively weak over the last decade. This section looks at the revenue impact of the major policy and administration reforms discussed in Sections 3 and 4, as well as macroeconomic patterns that may affect the relative performance of VAT.

Section 6 concludes.

A brief note on terminology. In the rest of the report, we use 'standard VAT' to refer to the part of the system which is most comparable to other countries, whereby businesses currently charge 15% on their taxable sales and reclaim 15% on their taxable purchases.[1] The 'levies' refer to the NHIL, GETFL and CHL. The term 'VAT system' is used to collectively refer to the standard VAT, levies and VFRS. Although the levies and VFRS are statutorily separate from VAT and revenues are reported separately, they are often payable by the same taxpayers and on similar tax bases, and they have their roots in the original, standard VAT system. The term 'combined VAT and levies rate' is used to refer to the combined tax rate from standard VAT and the levies.

[1] The standard rate of VAT was increased from 12.5% to 15% in the 2023 budget which was presented in November 2022 and gazetted on 29 December 2022. The bulk of the analysis in this report was undertaken prior to this and it will be some time before data are available for the period since the VAT rate increase.

# 2. Principles of VAT

In recent decades, the VAT has become widespread around the world, and it is a crucial source of tax revenue – especially in LMICs, where personal income tax revenues are typically low. The popularity of VAT rests on key design features which are intended to engender production and revenue efficiency. In this section, we review the design of VAT in principle and in practice, drawing attention to both the rationales and the problems arising from different choices regarding key policy parameters. We then consider best practice in VAT administration, drawing on expert recommendations and recent empirical evidence to provide guidance on how tax administration practices can best complement the desirable policy design principles of VAT.

## Principles of tax design

Raising tax revenue imposes a range of costs beyond the transfer of funds from private agents to the government. These costs range from administrative costs for government to compliance costs for taxpayers and the welfare costs resulting from people changing their behaviour in response to the incentives created by the tax system. The structure of the tax system and how the system is administered in practice play a crucial role in determining the size of these costs, as well as the ability of governments to raise revenues. The key challenge for policymakers in designing the most appropriate tax system – and determining the direction for reform – is to raise sufficient revenues while satisfying one's equity objectives (e.g., the distribution of income, or broader conceptions of fairness) at the lowest cost in terms of economic efficiency (including forgone economic growth, and administrative and compliance costs). And the importance of getting the design and implementation of VAT, and the tax system more generally, right increases with the level of revenues the government wishes to raise.

In all countries, the issues to consider when thinking about the design and administration of a good tax system or tax reform are many and complex. Even though LMICs differ from advanced economies in several key respects (and are themselves a highly diverse group), some key principles around tax design and many of the implications flowing from them are relevant to all types of countries. However, the interrelated economic, political and institutional characteristics of low- and middle-income countries, including weaker tax administrations and institutional capacity, lower tax morale and a larger cash-based and

unregistered economy relative to high-income ones, mean the challenges may be greater. For example, the issue of collectability is likely to be relatively more important in LMICs. Consequently, understanding the interactions between tax policy and administration and how this shapes a country's tax system in practice is crucial.

VAT is one important tax in a suite of tax policies (and other policies, such as social protection policies) governments have at their disposal to meet policy objectives. Mirrlees et al. (2011) argue that a good tax system should minimise welfare losses, compliance and administration costs, be both transparent and fair in terms of procedure, and be non-discriminatory. They set out guiding rules of thumb which often – though not always – help to fulfil these objectives:

- *Neutrality*: treating similar activities similarly unless there is good reason not to.
- *Simplicity*: minimising the number of rules and the complexity of procedures.
- *Stability*: avoiding unnecessary and regular changes to the rules.

While departures from these rules of thumb will be necessary, bearing these in mind should serve policymakers well in striving for a well-designed tax system.

In addition to raising revenues, the tax (and benefit) system plays a crucial role in redistributing incomes across the population and across people's lifetimes. While individuals have different preferences over the extent of this redistribution, most would agree that the tax (and benefit) system should be progressive.

A crucial consideration for this report, which focuses specifically on VAT, is that tax design needs to think about the system as a whole. While policymakers may have many objectives, some taxes are better at achieving certain objectives. Thus, it is important to think about VAT design in the context of a broader system, and consider whether the pursuit of a given objective is better served through the design of VAT or through some other measure, which could be another tax or, indeed, a non-tax policy.

The next section gives an overview of the basic functioning and advantages and pitfalls of VAT, with particular reference to the appropriate choice of policy parameters and best practice in VAT administration.

# Principles of VAT design

The VAT system was first introduced in France and Germany in the 1960s. Today, VAT has become one of the most important sources of tax revenue for countries around the world. As

of 2020, 170 countries around the world had a VAT system, and in 2018 VAT contributed 20.4% of total tax revenues in the OECD, on average (OECD, 2020), and 29.7% in a sample of African countries (OECD/AUC/ATAF, 2020).

The popularity of VAT is due to some fundamental design principles. If well implemented, VAT has a number of attractive features compared to the taxes it has often replaced (such as 'turnover taxes' or 'final sales taxes'). These relate to the way the tax is designed to be collected.

As stated in Mirrlees et al. (2011, p. 168):

> VAT taxes all sales, whether wholesale or retail, but allows registered traders to deduct the tax charged on their inputs. It is therefore a tax on the value added at each stage of the production process. Since the value of the final product is the total of the value added at each stage of production, the tax base—total value added—equals the value of final sales. Consequently, the tax is in effect imposed on the value of the final product but is collected in small chunks from each link in the supply chain.

This satisfies a key principle of optimal taxation that intermediate inputs purchased by traders as part of the production process should be untaxed; this ensures that traders' production decisions (e.g., whether to purchase an input or produce it themselves) are undistorted, allowing them to choose what is most efficient (Diamond and Mirrlees, 1971).

Table 2.1 provides an example of how the VAT system functions in principle (i.e., assuming this 'invoice-credit' and refund system works well, there is full compliance, and there are no exemptions or reduced rates). In the example, the VAT rate is 20%, and given that the sale from business C to the final consumer is for a pre-tax value of GHS 500, the total tax on final consumption is GHS 100. However, responsibility for remitting the GHS 100 is divided across the supply chain in proportion to the value added at each stage.

### Table 2.1. Simple supply chain with a 20% VAT

| | VAT charged on sales (GHS) | VAT reclaimed on input purchases (GHS) | Net VAT liability (GHS) |
|---|---|---|---|
| Analysis of transactions | | | |
| Sale from business A to business B for GHS 100 | 20 | 20 | 0 |
| Sale from business B to business C for GHS 300 | 60 | 60 | 0 |
| Sale from business C to final consumer for GHS 500 | 100 | 0 | 100 |
| Analysis of businesses | | | |
| Business A | 20 | 0 | 20 |
| Business B | 60 | 20 | 40 |
| Business C | 100 | 60 | 40 |

Source: Adapted from Mirrlees et al. (2011, Table 7.1, p. 169).

In principle, a final retail sales tax also satisfies the production efficiency theorem, as business-to-business (B2B) sales are not taxed. However, in practice the design of VAT has several advantages over a final sales tax system. These include the following:

- For an individual taxpayer, there is less of an incentive to evade VAT than there is under a sales tax system because the gains from evasion are smaller. This is because the system allows one to reclaim the VAT paid on inputs, hence evasion leads to a gain equal to the VAT paid on the value added in that stage of production only. For those that do not reclaim the VAT paid on their inputs (e.g., because they do not register for VAT) the input VAT they pay acts as a final withholding tax.
- Under a sales tax system, sellers are required to establish whether their customers will use their products for business or consumption, and to tax only the latter. But because there is little incentive for sellers to draw the distinction correctly, simple errors and purposeful misclassification may result in revenue losses. In contrast, VAT requires buyers to establish that they have used their purchases for business purposes, and since only registered traders can deduct VAT, misclassifying purchases that were actually used for consumption would normally require taxpayers to register for VAT and commit outright fraud (which they may be less willing to do).[2]

[2] That said, VAT fraud does occur; for example, a VAT-registered taxpayer may report purchases made for personal consumption as purchases made for business use, so as to claim input credit.

- Related to this, VAT is commonly implemented via self-assessment, and using the 'invoice-credit' approach. To claim a deduction for input VAT, businesses require an output VAT invoice from their supplier. This gives an incentive for purchasers to encourage compliance by their suppliers and the symmetric invoices in theory can provide a useful audit trail for tax authorities, allowing them to check that deductions have a corresponding payment. Some revenue authorities require businesses to submit details of their transactions with different suppliers and customers (sometimes above a certain sales threshold) automatically.[3]

Despite these advantages, there are also costs to a VAT system:

- VAT may be expected to increase compliance costs relative to a standard final sales tax. The scope of VAT systems covers all sales (as opposed to sales to final consumers only), bringing more businesses and more transactions into the tax system, increasing aggregate taxpayer compliance costs. To work effectively VAT has to be implemented by self-assessment and the bookkeeping costs for a given business (and compliance costs that businesses face more generally) are likely to be higher than under a final consumption tax because businesses need to keep detailed records for the invoice-credit system.
- In addition, it may be costlier in terms of administration costs for the government. As noted above, more taxpayers and transactions are drawn into the system, increasing the processing and audit load of the tax authority.
- The design of the VAT system also creates potential fraud risks, which can be costly in terms of revenue, efficiency and equity if not managed well. A particular area of risk is the system for administering refunds in cases where reported input VAT paid exceeds output VAT charged, which we discuss shortly.

# VAT policy parameters

Beyond the basic design features of VAT, there are a number of features that policymakers can and do tweak in the pursuit of varied objectives.

## VAT rate differentiation

Having multiple rates of VAT is a departure from the principle of neutrality: different goods and services are subject to different tax rates, therefore potentially distorting people's behaviour over what goods and services to buy or businesses decisions on what to supply. In

[3] Such an approach has been adopted in India (Gadenne, Nandi and Rathelot, 2019), Brazil (De Paula and Scheinkman, 2010) and Uganda (Almunia et al., 2021), for instance.

general, it will also tend to increase the costs of administering and complying with the VAT system. For instance, Ebrill et al. (2001) argue that having multiple rates of VAT complicates the accounting, invoicing and tax-filing requirements of businesses, makes auditing of VAT returns more difficult, and can lead to more refund claims (where the input VAT deducted exceeds the output VAT charged), which are particularly prone to fraud. It can also lead to costly litigation and enforcement difficulties around boundaries between goods subject to different rates of VAT. Furthermore, the presence of reduced rates (or exemptions, which are discussed in the next subsection) for some goods may lead to lobbying for the extension of such preferential treatment to other goods (the 'me too' effect). This can result in a proliferation of reduced rates that severely limits the ability of VAT to raise revenue. Finally, VAT rate differentiation can be perceived as unfair in so far as it penalises those of otherwise similar backgrounds according to their preferences. This is the case if individuals with similar levels of income have different preferences over what to consume: some preferring to spend more on higher-quality foods for consumption at home which are exempt from VAT, and others preferring to spend more on the occasional meal in restaurants, on which VAT is charged.

## Possible justifications for rate differentiation

Nonetheless, VAT rate differentiation is widespread. Ebrill et al. (2001), for instance, found that around half of countries had multiple non-zero VAT rates. Below we consider the possible rationales behind some of these policy choices.

### Efficiency

Although in general neutrality is desirable in so far as it reduces distortions, there are efficiency cases for departures from neutrality in certain circumstances. There may, for instance, be a case for having lower taxes in cases where choices are more responsive to taxes and prices. This is the essence of the 'inverse elasticity rule', which suggests that taxes should be lower on goods where the price elasticity of demand is higher. The idea is that, for a given tax revenue target, relatively higher rates on more inelastic goods reduce the overall size of distortions induced by taxation, minimising deadweight welfare losses. This logic can be extended to analogous cases: if agents respond more to a tax on some goods or services by working less in the formal market or producing more at home to avoid market purchases, or if taxpayers have differential propensities for tax evasion, then there may be good reasons for

departing from neutrality in certain circumstances on the grounds of efficiency considerations.[4]

The first two reasons can be summarised as complementarities between particular goods or services and market work, and can justify lower rates on services like childcare or labour-intensive services such as domestic care, repair of private dwellings, window-cleaning and hairdressing, all of which can be substituted with home production (Mirrlees, 2011).

The third reason – differential propensities for tax evasion – could be particularly relevant in developing countries due to the presence of a large informal sector (Cremer and Gahvari, 1993). It may be that the extent to which taxes can be evaded by supplying or purchasing products without issuing tax invoices varies between different goods and services. Hence, revenue could be raised more efficiently by applying high tax rates to sales in cases where it is hard to shift to production by unregistered businesses, and low tax rates to goods and services for which such shifts are relatively easy. This may provide a theoretical justification for high tax rates on things such as telecommunications or imported goods (for which records are more likely to exist) and low tax rates on food or locally supplied services.

However, there is currently no empirical evidence that we are aware of on how the elasticity of taxable expenditure with respect to VAT rates varies across sectors. Such evidence is needed to inform a well-designed rate structure based on this rationale. In its absence the case to support this sort of VAT rate differentiation is weak given the costs imposed.

## Equity

Perhaps the most common justification for reduced rates of VAT on certain items, especially on food, and to a lesser extent on fuels for domestic heating and power, relates to equity considerations. This also applies to VAT exemptions, to which much of the following applies too.

Of these equity considerations, redistribution is likely the most material, although this is rarely explicit in policy. Applying reduced rates of VAT to goods that constitute a relatively larger fraction of total spending for poorer households than richer ones is deemed to make VAT (and possibly the tax system as a whole) more progressive than it would be if charged at

[4] See, for instance, Abramovsky, Phillips and Warwick (2017) for a literature review and further discussion of these issues.

a uniform rate on all goods and services. However, research suggests this is likely to be a poorly grounded rationale for a number of reasons.

First, research from the OECD suggests that the oft-claimed regressivity of VAT is consistently an artefact of measurement: specifically, it largely derives from the differences between income and expenditure across the distribution when considered at a single point in time. When assessed as a percentage of expenditure, the apparent regressivity of VAT is much reduced across all countries studied (Thomas, 2022). To the extent that reduced VAT rates (or exemptions) are motivated by a desire to make VAT itself (more) progressive, this research challenges the basic facts underlying this rationale.

Second, concurrent research has explored to what extent VAT rate differentiation particularly benefits poorer households in practice. Warwick et al. (2022) show that in a number of LMICs, reduced VAT rates are at best weakly progressive (including in the case of Ghana), but are sometimes even slightly regressive. This is partly owing to the fact that poorer households obtain more of their total consumption from home production. Moreover, Bachas, Gadenne and Jensen (2023) find that there is a strong negative relationship between consumption and the share of purchases in the formal sector across LMICs. This suggests that VAT rate differentiation will target poor households even less well in LMICs in practice.

Even if we put this evidence to one side, whether VAT rate differentiation is progressive or not does not provide sufficient justification for reduced rates on distributional grounds. This is because what ultimately matters is not whether the VAT system operates in a way that redistributes from rich to poor, but the extent to which the tax and benefit system as a whole achieves the desired level of redistribution – whatever that may be. If the government can adjust the rates and structures of the direct tax and benefit system (which does not distort spending patterns in the same way that VAT rate differentiation does) to redistribute between the rich and the poor, such measures would redistribute more efficiently.

Most low- and middle-income countries have less well-developed direct tax and benefit systems than high-income countries, meaning that the case for using VAT rate differentiation in order to redistribute is somewhat stronger: reducing the price of goods which poor households disproportionately consume may be the only way to help such households. This leads some experts to continue recommending zero or reduced rates (or exemptions) for items that are disproportionately consumed by poorer households. However, in the context of expanding welfare programmes, the capacity of these countries to implement redistribution via methods other than the indirect tax system is clearly improving. Even simple and broad-based schemes are likely to be superior to VAT rates as a means of increasing the incomes of poorer households. Indeed, Warwick et al. (2022) show that in six LMICs – including Ghana

– recycling the revenue from a broader VAT base in the form of an untargeted, universal cash transfer could easily compensate poorer households for their higher VAT burden, while still leaving revenue to spare. This suggests policymakers would do well to explore other means for redistribution, rather than the costly approach taken through the VAT system in many countries as it stands.

Aside from redistributive motives, there exist two other equity arguments for rate differentiation. The first is that certain goods and services are essential for life; however, for this to be distinct from the more general point about redistribution requires that individuals would buy 'too little' of these essentials when they are taxed, even if they had the money to buy them. The second is that certain goods and services are very closely related to the preferences or needs of certain groups that the government may want to target; for instance, goods bought specifically by those with disabilities might have lower rates applied. Both of these arguments might be used to justify lower rates in specific cases but are unlikely to apply to broad sets of purchases.

### Correcting market failures

Another seemingly appealing strategy is to apply a higher (lower) VAT rate to discourage (encourage) a good that is deemed to have a negative (positive) externality. However, the structure of VAT is not conducive to tackling externalities (Mirrlees et al., 2011). There are at least two reasons for this.

First, a reduced rate of VAT provides a bigger subsidy to higher-priced versions of the good to which the rate is applied. A reduced rate of VAT is therefore likely to be a well-designed subsidy for a good where the social benefit of its consumption or production is strongly positively correlated with its price. However, in many cases the social benefit from using a high-priced version may be no greater (or may even be smaller) than a low-priced version. Consider, for instance, a reduced rate of VAT on public transport, intended to reflect lower environmental costs relative to private vehicle usage. A reduced rate of VAT provides a bigger subsidy to travelling in luxury as opposed to standard public transport, while the environmental benefit of using luxury public transport is unlikely to be larger than that from using standard public transport (indeed, it may be smaller if part of the luxury is additional space which reduces the capacity of the vehicle).

A second issue is that most businesses are able to reclaim VAT on inputs. This means that a reduced or zero rate of VAT on the good does not reduce the price paid by VAT-registered businesses and therefore does not provide an incentive for businesses to use more of it. Taking the case of public transport again, a reduced rate of VAT on public transport would

not incentivise a business to switch from private transport to public transport, while business use of public transport is likely to be just as beneficial in reducing pollution and congestion as use by final consumers.

With these issues in mind, it seems unlikely that using reduced rates of VAT on things like books, sporting or cultural performances, public transport or environmentally friendly goods is a particularly good way of boosting literacy, promoting culture or helping the environment. However, as with the arguments against using VAT rate differentiation for redistribution, one must also examine whether alternative, better-targeted mechanisms exist for these purposes.

Low- and middle-income countries may face greater difficulties in designing and operating alternative, specific subsidy schemes, but are also likely to face additional difficulties in coping with the compliance, corruption and lobbying pressures resulting from VAT rate differentiation; whether there is a stronger rationale for lower rates of VAT in these countries is therefore unclear. It is also worth noting that the problem of boundaries and the susceptibility of VAT rate differentiation to political lobbying would also affect other forms of support such as direct targeted subsidies. However, such direct subsidies may be more transparent than a reduction in the rate of VAT (Copenhagen Economics, 2007), which may not be recognised as the subsidy it actually is. This may mean that the political hurdle necessary for the extension of subsidies is greater than that for VAT reductions, meaning less scope for the proliferation of subsidies over time.

## VAT exemptions

If the government feels there is a need to treat goods differently, because the use of other instruments to redistribute or to promote socially desirable consumption is felt to be infeasible, or if the government feels the application of a standard rate of VAT to all goods is politically unachievable, application of reduced or even zero rates is generally preferable to exempting specific goods and services from VAT. The use of VAT exemptions to incentivise investment is not recommended either.

Exemptions are an anathema to the logic of VAT: as with zero-rating, businesses producing exempt products do not charge VAT on sales, but in addition they cannot reclaim VAT on purchased intermediate inputs. As many businesses produce and sell both exempt and non-exempt goods, the need to allocate input VAT between non-exempt and exempt outputs (credit being available for the former but not the latter) can create substantial additional administration and compliance burdens, as well as increasing opportunities for tax avoidance. Such issues are likely to be especially pertinent for LMICs given the challenges they face in monitoring businesses and administering the tax system (Bird and Gendron, 2007).

More fundamentally, because businesses producing exempt goods cannot reclaim input VAT, exemptions violate the key principle of tax design that intermediate inputs to production should not be taxed. Exemptions, therefore, create many non-neutralities leading to distortions in production behaviour. As noted by Mirrlees et al. (2011, p. 175):

> Exemption creates an incentive to 'self-supply' – that is, it encourages firms producing VAT-exempt outputs to undertake as many links of the supply chain as they can themselves to ensure that value added at intermediate stages is not taxed. So, for example, firms whose outputs are VAT exempt have a strong incentive to supply their own security services, technical support, cleaning services, and so on, rather than contract them out and face irrecoverable VAT bills. Exemption can create distortions in competition when exempt firms compete with non-exempt firms – favouring exempt over non-exempt firms when selling to consumers, and favouring non-exempt over exempt firms when selling to other traders.

Exempting goods and services can affect the prices of final goods and services purchased by consumers in complicated ways. This is because businesses selling exempt products cannot reclaim VAT paid on purchased inputs. Consequently, the sale price of such exempt products will contain a taxation component from inputs. In turn, this means that the price of any product using exempt products as an input will also be affected by taxes on these earlier inputs. The impact of this on final consumer prices depends on where exemptions are located in the supply chain (final or intermediate consumers) as well as the relative size of value added in each link of the chain.

If exemptions are applied to final sales, then the effective tax rate (ETR) is lower than when the standard VAT rate is applied, but higher than if a zero rate is applied to final sales: provided the final business in the production chain added value, the input VAT that cannot be reclaimed will be less than the output VAT that would have otherwise been charged. In the example in Table 2.2, the same transactions take place as in the previous example, with one crucial distinction: the supplies produced by firm C are exempt, meaning no VAT is applied when firm C sells these to consumers, and also that it cannot reclaim VAT on inputs. As such, firm C's inputs are GHS 60 higher (because it cannot reclaim the input VAT paid). If firm C passes the increase in its costs through to the consumer entirely (via higher prices), the ETR is 12% (60/500) rather than 0%. This is, however, lower than the 20% (100/500) ETR the final consumer would have paid if the product was taxed at the standard VAT rate. By contrast, if firm C was selling a zero-rated item, then it could reclaim the GHS 60 from its input purchase, and VAT would actually be zero, generating null net VAT liabilities and revenues.

### Table 2.2. Exemption example 1: final sales exempted

| | VAT charged on sales | VAT reclaimed on input purchases | Net VAT liability |
|---|---|---|---|
| ***Analysis of transactions*** | | | |
| Sale from firm A to firm B for GHS 100 | 20 | 20 | 0 |
| Sale from firm B to firm C for GHS 300 | 60 | 0 | 60 |
| Sale from firm C to final consumer for GHS 500 – **VAT exempt** | 0 | 0 | 0 |
| ***Analysis of businesses*** | | | |
| Firm A | 20 | 0 | 20 |
| Firm B | 60 | 20 | 40 |
| Firm C – **VAT exempt** | 0 | 0 | 0 |

Source: Adapted from Abramovsky, Phillips and Warwick (2017)

In a second example, demonstrated in Table 2.3, the supplies that are exempt are located in the middle of the supply chain (those produced by firm B). For instance, it may be that basic foodstuffs (such as wheat flour and rice) are exempt from VAT, but that processed foods (such as biscuits, cakes and sandwiches) are subject to VAT. As above, input VAT paid by firm B (in this example, the seller of foodstuffs which are exempt) cannot be reclaimed, and this is thus built into the price of basic foods. Consequently, the firm producing processed food (firm C) must pay more for its supplies (and cannot reclaim any of the input VAT built into the price). The result is that processed foods cost more than if basic foods had been subject to the standard rate of VAT, with the businesses able to reclaim all input VAT paid. Thus, an exemption on intermediate inputs raises the cost of final consumer products: the full rate of VAT is still chargeable on the sale of the final product to consumers and, in addition, the pre-tax price of this final product is increased as a result of unreclaimable input VAT earlier in the production chain.

In this example firm B sells VAT-exempt goods, so no VAT is levied in the intermediate link, and the total VAT paid throughout the supply chain is GHS 120. The final product bears an ETR of 24% (120/500) instead of 20%, which would be the rate if the standard rate were applied throughout the supply chain and exemptions avoided.

### Table 2.3. Exemption example 2: intermediate sales exempted

| | VAT charged on sales | VAT reclaimed on input purchases | Net VAT liability |
|---|---|---|---|
| **Analysis of transactions** | | | |
| Sale from firm A to firm B for GHS 100 | 20 | 0 | 20 |
| Sale from firm B to firm C for GHS 300 – **VAT exempt** | 0 | 0 | 0 |
| Sale from firm C to final consumer for GHS 500 | 100 | 0 | 100 |
| **Analysis of businesses** | | | |
| Firm A | 20 | 0 | 20 |
| Firm B – **VAT exempt** | 0 | 0 | 0 |
| Firm C | 100 | 0 | 100 |

Source: Adapted from Abramovsky, Phillips and Warwick (2017)

Trying to mitigate this unintended effect of exemptions (the effect of higher than intended ETRs) by introducing further ad-hoc exemptions here and there will make the system more complex and less transparent, and undermine many of the objectives of a modern VAT system. A better approach would be to reconsider the VAT rate structure and exemptions jointly, and if some sectors need to be VAT-free, then they should be zero-rated rather than exempted. Exemptions are misused by many countries and a significant reduction in their use is an important long-term policy aim. We provide some information about international practices later in Section 3.

## Possible justifications for exemptions

As with VAT rate differentiation, exemptions are indeed widespread. Possible justifications include the following.

### There is no obvious 'sale' or 'price'

The reason why some specific sectors such as financial services and the public sector are exempted in many countries is that it is difficult to apply VAT to activities where there is not an obvious 'sale' or 'price'. There are ways to proxy the sales of such services (e.g., based on the margin between interest paid on deposits and charged on loans by financial services businesses), as discussed in Mirrlees et al. (2011). But Bird and Gendron (2007) argue that

middle-income countries would be best served by focusing on general improvements to VAT administration and structure, rather than attempting to remove VAT exemptions in these specific areas.

### Reducing administration costs, including refunds

Second, applying an exemption to goods means that fewer businesses are in the scope of VAT, so the tax administration has to process and monitor fewer taxpayers (even if the administration of remaining taxpayers is complicated somewhat). This may partially explain the choice to exempt rather than zero-rate in many contexts. In addition, exemptions avoid the problem of refunding VAT that can occur when a reduced or zero rate is applied instead; by definition, such refunds would not occur under an exemption regime.[5] VAT refunds raise administration and compliance costs and create opportunities for fraud even in developed economies. Weaker tax regimes in most LMICs suggest such problems are likely to be even greater. This means that when shifting from exemptions to zero or reduced rates, governments should ensure that the processes for dealing with refunds are as robust as possible. Harrison and Krelove (2005) discuss best practice for managing VAT refunds, having examined the experience of developed and developing countries (see later on in this section for a summary).

### Incentivise business activities

One of the most common justifications for exempting certain goods or services is that it incentivises investment. Klemm (2010) provides a detailed and useful discussion of the merits of different types of corporate tax incentives and of their costs. He argues that it is not advisable to provide investment incentives through tax instruments such as VAT exemptions for specific inputs or outputs. In the case of inputs, this is because VAT can be reclaimed on input purchases – although if large upfront investments are involved which would generate large refunds, an effective system of refunds will be necessary (see below). Where this is not the case, exemptions could support investment by improving cash flow.

In light of the preceding discussions about reduced rates, zero rates and exemptions, an evaluation of how these are affecting consumers, government revenues, businesses' compliance costs and administration costs to revenue authorities, as well as the feasibility of

[5] If, for instance, food were zero-rated, retailers of food would not charge VAT on their sales but could reclaim VAT on their inputs (e.g., the goods and services needed to run the store): the government would therefore need to refund food retailers.

replacing exemptions with zero rates (where it is desirable for a good to be VAT-free), would be welcome in the process of assessing the VAT system in Ghana.

## VAT registration and simplified schemes

VAT registration thresholds are another form of exemption, and are usually aimed at small businesses. Most countries operate a turnover registration threshold: traders with turnovers below this level do not need to register for VAT (and sometimes cannot register). The rationale for this is that the costs of ascertaining VAT liabilities and recordkeeping are substantial and not entirely proportional to turnover. Hence, particularly for small businesses, the revenues obtained are likely to be outweighed by the costs of administering and complying with the VAT system.

Harrison and Krelove (2005) recommend setting a relatively high threshold when administrative capacity is weak; the number of VAT payers is kept manageable while revenue losses should be fairly small. Keen and Mintz (2004, p. 24) argue that an optimal VAT registration threshold must balance 'desires to increase tax revenue, reduce administration and compliance costs, and minimize the distortions arising from the differential treatment of businesses above and below the threshold'. De Paula and Scheinkman (2010) and Gadenne, Nandi and Rathelot (2019) maintain that having significant numbers of businesses outside the VAT system can create distortions in production decisions, which may be costly. Too high a threshold could reduce VAT revenues, while too low a threshold might impose excessive compliance costs on small businesses, and increase the administrative burden faced by tax authorities. Bird and Gendron (2007, p. 3) also come to similar conclusions and argue that 'it is wiser to set [the] threshold too high than too low'. What they mean by high and low is not so clear.

Many countries operate simplified VAT schemes for small traders and these can have the benefit of minimising compliance costs, bringing businesses into the tax net and collecting small amounts of revenue – but only when designed properly. Such schemes often involve turnover taxes (i.e., a lower rate applied to a broader tax base) or what Bird and Wallace (2004) call presumptive taxes.[6]

Mirrlees et al. (2011) shows that these types of schemes need to be carefully considered before they are introduced, and then rigorously evaluated to ensure they are meeting their aims (evaluation and careful design are important general lessons for tax policy). One

[6] Under presumptive taxes, traders pay an amount based on their turnover and a presumed fraction of value added, or even a presumed amount of value added, for instance.

concern is that there is little empirical evidence on the effect of changes in VAT thresholds on revenue, compliance, administration costs, and production incentives. Such evidence could be used to help inform the optimal location of VAT registration thresholds, and the potential gains from operating a reduced scheme below the threshold. Analysis of survey and administrative data of turnover and value added at the transaction, taxpayer and firm level could help policymakers to better understand the composition of businesses, the characteristics of their transaction, and how these relate to tax incidence and compliance. We return to these issues in Section 3.

# Principles of tax administration

Collecting sufficient tax revenues in the least costly and fairest manner possible is predicated on effective implementation. This in turn is dependent on the administrative processes in place (though as discussed already, policy design is also important for simplifying administration). Though we do not attempt to exhaustively review the literature on tax or VAT administration here, we draw attention to key lessons from both policy experts and the academic literature.

Tax administrations are among the biggest enterprises in any country in terms of revenue generated; thus, having both a strategic framework and a work plan is crucial. For most modern taxes – including VAT – compliance and administration rely on effective systems of self-assessment built around the concept of voluntary tax compliance. A growing body of research seeks to understand the drivers of different levels of voluntary compliance in order to inform policies that can improve outcomes via this margin – see OECD (2021) for a recent review. However, the challenges in this area of taxation are complex and our understanding of solutions remains partial. It is useful, though, to distinguish between two sorts of steps that can encourage voluntary compliance. First, tax compliance should be enabled by ensuring that the associated processes of registering, filing and paying taxes are as transparent, convenient and low-cost as possible. This objective needs to be kept in mind when evaluating different features of tax administration. Second, there is a broader challenge of building a culture of taxpaying, sometimes known as 'tax morale'.[7] This goes far beyond the design of any specific tax – let alone individual aspects of a given tax – and thus is largely considered beyond the scope of this report.

[7] See Luttmer and Singhal (2014) for a literature review on this topic.

However, voluntary compliance can only go so far, and tax administrations must be able to act to reduce non-compliance.

A first step is to have a function-based organisational structure, with teams organised around the type of work being undertaken (e.g., registration, payments, audits, data analytics) rather than tax types. Within this structure it may make sense to stratify taxpayers by size, and have different teams or offices to deal with small versus large taxpayers. There should also be a strong emphasis on risk-based audit programmes that cover a broad range of taxpayer groups and compliance issues.

Information technology systems based on single and reliable taxpayer identification numbers should be a priority. At the same time, the use of third-party information to verify tax liabilities is important, and information systems that facilitate the sharing of information within tax authorities and with third-party agents are essential. However, of equal importance is that tax authorities have the ability (in terms of personnel, technology and legal powers) to *use* the information in a credible way, in order uncover non-compliance and ultimately to generate an effective deterrence effect. That is, taxpayers need to perceive that the cost of evading tax is high enough that complying with taxes is preferable. In addition, a sound strategy for developing modern taxpayer services is needed, which should include a comprehensive communications strategy.

The IMF (Russell, 2010, p. 3) summarises the main features of a typical taxpayer compliance programme:

- It is structured around the major taxpayer segments, typically: (1) individuals; (2) micro and small businesses; (3) medium-sized businesses; (4) large businesses; (5) non-profit organisations; and (6) government organisations.
- For each taxpayer segment, it is important that key facts and contextual information are recorded and understood (e.g., number of taxpayers, nature of entities, total tax contribution, number of persons employed, and structural features).
- For each taxpayer segment, tax-specific and more general compliance issues and risks need to be identified, and strategies devised to address these.
- A list of the different activities and initiatives for each taxpayer segment needs to be maintained, including information on expected/targeted outcomes.
- Delivery of the activities/initiatives and performance relative to target needs to be monitored and reported on, to incentivise implementation, facilitate transparency and build confidence in the administration of the tax system.

Getting all of the necessary components of a highly functional modern tax administration right takes time, effort and perseverance. There are many margins tax administrations can focus on to improve their performance, and sometimes these can be tackled one at a time. However, having a sound overall and long-term strategy which provides guidelines for further reforms and improvements, and is integrated with a wider tax policy, should be a priority for any country wishing to achieve excellence in tax administration.

# Principles of VAT administration

This report does not aim to provide a comprehensive overview of how to structure VAT administration; rather, it highlights some key administrative and compliance issues to consider. Krever (2008) provides a comprehensive guide to best practice in VAT administration and roadmaps for reforms in the context of Africa; Cnossen (2019) provides a more recent, albeit briefer, treatment of VAT administration on the continent.

## Voluntary compliance

Like most modern taxes, for the majority of taxpayers and for the majority of the time, the determination and remittance of VAT liabilities depend on self-assessment. As a result, each of the building blocks of this process plays an important role in encouraging and enabling taxpayers to understand and comply with the tax system in a way that minimises costs and leakages, and maximises the share of the due revenues that is collected. The 'compliant process' involves a number of constituent steps, including registering VAT taxpayers, processing tax returns, and collecting payments.

### Registration

Registration is the first step. Who is required to register for VAT is substantively determined by factors discussed earlier, including the scope of VAT exemptions and the level of the mandatory registration threshold. Conditional on these factors, for potential taxpayers the process of VAT registration should be made as simple as possible. Information about how to register should be made publicly available (including online), alongside the requirements of taxpayers in terms of recordkeeping once registered. Schächtele, Eguino and Roman (2022) show how simple email reminders to businesses significantly increase taxpayer registration in Brazil. At the point of registration, the tax authority should collect certain information about the taxpayer regarding business type, location and scale, which should be verified at the point of approval, and there is a case for preventing taxpayers below a certain size from registering, given the administration costs incurred and the revenue potential with such taxpayers. All taxpayers should have a unique taxpayer identification number (TIN) that can be matched

across tax types. Such information needs to be verified in order to prevent VAT fraud down the line (we discuss forms of VAT fraud shortly) and to support taxpayer monitoring and enforcement more broadly. Investing time and resources to ensure this information is of good quality pays dividends: Mayega et al. (2019) describe how missing information and duplicate records hamper the work of the Uganda Revenue Authority.

At the same, the amount of information collected and the intensity of scrutiny must be proportionate, as lengthy registration processes can impose significant costs on businesses. 'One-stop shops' – where businesses can register for multiple taxes and licences in one place – appear to present the ideal way of reducing these costs alongside broader compliance and registration costs. Steps such as these should help to maximise voluntary registration. As previously discussed, in an effective VAT system where the process is arranged efficiently, many potential taxpayers should have relatively strong incentives to register. Registering remaining taxpayers is a significant enforcement challenge, and is strongly related to taxpayer identification. Various strategies are available and can be considered, including the use of 'secret shoppers' and mass registration exercises. However, such exercises are likely to be resource-intensive and evidence on their effectiveness is lacking or even points in a negative direction, and large unregistered taxpayers are not generally the target of such policies (Gallien et al., 2023). Thus, prioritising more fundamental VAT administration steps likely makes more sense.

It is also important not to forget the process of deregistration. Moore (2020) notes that maintaining accurate taxpayer registers is often not a priority in African tax administration. This may result in cadres of VAT taxpayers that include large numbers of dormant businesses. These may distract the resources of tax administrations, and perhaps more substantively create opportunities for evasion and fraud, such as via the submission of fraudulent VAT refund or deduction claims, either by the dormant business or other businesses falsely stating that they have used it as a supplier. Tax administrations should therefore maintain a regularly updated and centralised master list of taxpayers categorised by status, and should ensure that businesses confirmed closed are removed from the register.

## Invoicing and filing

The processes in place for VAT invoicing and filing are important for both the taxpayer and the tax authority. For the tax authority, tax returns and invoices need to provide sufficient information to cross-check self-assessments and provide for ongoing monitoring and enforcement as necessary. For the taxpayer, the process of filing VAT returns can be costly. PwC and the World Bank (2020) report that VAT compliance takes an average of 90 hours

per year for businesses around the world, though with significant variation across countries. These two considerations need to be traded off carefully.

Best practice in tax filing processes involves multiple components. Tax returns should be consistent across taxpayers, offices, and – as much as possible – over time. They should also be made easily available with instructions, including online. The information requested on tax returns should be carefully calibrated: only information that will actually be of use to the tax authority should be collected; anything additional only adds to the costs of doing business. In terms of filing frequency, most countries in Africa require monthly VAT filing, which may have benefits in terms of reducing the cost of a given missed tax return, for instance. On the other hand, more frequent filing does increase compliance costs for businesses – Luksic and Mittal (2019) show this in the case of India. E-filing provides an opportunity to reduce compliance costs and improve information quality – but may need to be introduced gradually.

In the past, most countries processed paper tax returns. Increasingly, though, technology offers avenues to improved tax invoicing and filing for both the authorities and for taxpayers:

- *Certified tax software*. Such platforms for reporting tax information can help taxpayers to determine the correct tax due on a transaction, link invoices to tax returns, and facilitate the completion of VAT returns, for instance. In principle, this should reduce compliance costs and improve information quality, though existing evidence on their effectiveness is scarce, and evidence on take-up is not encouraging (PwC and World Bank, 2020).
- *Electronic fiscal devices*. Also known as electronic sales registration machines (ESRMs) and electronic billing machines (EBMs), these automatically transmit sales invoices to the tax authorities and produce invoices for businesses, providing a substantial paper trail of transaction-level information to aid enforcement. Ali et al. (2021) find that these significantly increase reported sales for VAT-registered businesses in Ethiopia. However, these systems have high upfront costs and their effectiveness can be undermined by technical constraints.
- *E-invoicing*. Electronic invoicing is a newer solution, whereby transaction-level information is digitally signed and authenticated electronically, and is provided to the tax authority. It can involve different approaches, from using specific formatting to dedicated online portals. Relative to EBMs, the cost of e-invoicing appears lower, with the required software often provided free to businesses (Barreix and Zambrano, 2018); Casey and Castro (2015) argue this path is now more promising than EBMs. Indeed, e-invoicing has quickly become popular and is mandatory in many countries. Bellon et al. (2022) show that the policy has a positive effect on VAT compliance in Peru.

- *E-filing*. Filing digital tax returns is increasingly common around the world for all tax types, and is growing rapidly in popularity in Africa. Intuitively, e-filing has the potential to improve the quality of information, reduce compliance costs for businesses, and reduce the opportunities for collusion or extortion by tax officials. All three ideas find support in the literature, in the form of both country studies, for example in Tajikistan (Okunogbe and Pouliquen, 2022) and cross-country analysis (Kochanova, Hasnain and Larson, 2020). However, specific features of implementation matter: Yılmaz and Coolidge (2013) suggest that in Ukraine, low trust in the e-filing system led to parallel paper returns being submitted, negating any saving in compliance costs.

Overall, there is strong evidence to support the idea that technology can improve both invoicing and filing processes, with evidence particularly positive for e-invoicing and e-filing. However, at the same time it is important that tax authorities do not leave behind those without access to the required systems and technologies. Thus, it may be preferable to introduce these systems in a phased process, and provide support to taxpayers making the transition.

## Payment

For taxpayers generating net liabilities (we return to cases of net credits shortly), payment is the final and crucially important step of the compliance process. Payment of liabilities clearly needs to be linked to taxpayer accounts in a secure and consistent way, allowing the net position of a taxpayer to be updated alongside their monthly activity. Cnossen (2019) argues that payments should ideally be accompanied by returns, generating a reverse paper trail to protect both sides of the transaction. He also makes the case for clear 'stacking' rules which provide a hierarchy of where received payments should be lodged against; this may mean specifying principal or penalties, for instance, but may also involve specifying tax type in some cases.

Two other related practical issues of note here are who handles the payment, and the forms of payment provided for. The scope for corruption and leakage, and the administrative cost of managing payments, would seem to be greater when human interaction is involved. Moreover, cash or cheque payments may carry greater compliance costs for taxpayers who have to travel to a tax office to settle their accounts, and digital payments provide a more reliable data trail for updating accounts and potentially for enforcement. Thus, providing for digital payments (e-payments) can have many benefits. Indeed, Kochanova, Hasnain and Larson (2020) find that the reduction in compliance costs from implementing e-filing is particularly large when e-payment is introduced simultaneously.

## Effective enforcement

While the principles outlined above will help to maximise the number of taxpayers who comply with the VAT system, credible and effective systems of enforcement are required to detect non-compliance in parallel. Not only does this recover missing tax revenue and level the playing field, it also creates an important deterrent effect to buttress the enabling arm of the tax administration.

### VAT fraud and evasion

The invoice-credit approach to VAT has 'self-enforcing' properties. However, there are many reasons why in practice this self-enforcing feature can lose its bite. If what is reported in self-assessed tax returns is not being corroborated, then reported liabilities may not match up to real activity. Even when tax returns are scrutinised or subject to audit, there can be significant costs to tax authorities who wish to use the paper trail generated by the system – especially when the paper trail is a physical one. And the self-enforcing property breaks down at the final stage (business to consumer (B2C)), or more generally when a business sells to an unregistered buyer, such as a VAT exempt or informal business. This is known as the last-mile problem. There are a number of ways in which weaknesses such as these can be exposed to commit VAT fraud or evasion:

- *Underreporting of sales*. Retail businesses (or, more broadly, those selling primarily B2C) have a particularly strong incentive to do this. Businesses may also hide their true output through barter arrangements.
- *Overreporting of inputs and the refund system*. Input tax credits create incentives to inflate reported input purchases or claim consumption purchases as business purchases; this may be paired with misclassifying sales in order to generate a refund claim.
- *Fictitious or missing traders*. Some businesses liable for VAT may not register. Others may register for the purpose of refunds or in order to buy and sell invoices in a fraudulent manner ('invoice mills').
- *Insolvency fraud*. There are cases where businesses may sell on purchased taxable goods at inflated prices and disappear before remitting the VAT due (known as carousel fraud when in an international context).

The prevalence of each of these types and sub-types of fraud and evasion may vary substantially by context. In the case of Pakistan, Waseem (2020) estimates a total VAT evasion rate of 38%, driven by (exporting) businesses overclaiming refunds in the context of a destination-based VAT and businesses underreporting domestic B2C sales.

## Monitoring and audits

Audits are the means by which (the extent of) non-compliance is determined, and their impact on the perception of detection for non-compliance among taxpayers means they carry a potential deterrence effect. Thus, audits and taxpayer monitoring more broadly are central to the credibility of VAT administration. At the same time, audits may impose large costs on both the tax administration and taxpayers.

Audits can vary in intensity and focus. Ebrill et al. (2001) argue that a function-based revenue authority would typically implement a combination of desk verifications, registration checks, VAT refund audits, issue-oriented audits, comprehensive audits, and tax fraud investigations. They suggest an effective VAT audit programme should cover up to 30% of taxpayers each year, and that these audits need to consider other tax types in parallel. Clearly, this may be resource-intensive, but it is important to retain some balance in the distribution of audits. The practice of auditing all refund claims – as noted in some countries by Ebrill et al. (2001) – runs contrary to this, although initial refund claims likely deserve a high audit probability. Resource constraints are a key motivation behind the practice of segmenting taxpayers by size, and providing differentiated services and greater monitoring effort to those taxpayers responsible for a greater share of revenues. Evidence suggests that the higher monitoring effort extended to larger businesses can significantly increase tax revenues (Basri et al., 2021), though it is also clear that businesses can respond to enforcement efforts when thresholds are known (Almunia and Lopez-Rodriguez, 2018). Targeting smaller or informal businesses may be less common, but Andrade, Bruhn and McKenzie (2013) find positive returns in Brazil. Overall, this evidence suggests that there are often high returns to increased enforcement efforts.

Conditional on the resources and functional set-up of VAT monitoring, there are important questions about how audits should be selected and conducted. Audit selection can use a range of different types of information: industry benchmarks (e.g., mark-up ratio), deviations from standard taxpayer behaviour (e.g., irregular filing), cross-checking of tax types (e.g., VAT and corporate income tax, or VAT and customs data), or third-party data. Clearly, though, such approaches are predicated on the availability and quality of such data, highlighting the importance of robust systems for collecting and storing tax data. Staff also need the skills to make use of such data. Tax authorities should also consider undertaking some random audits, which can build a credible audit threat and also generate better evidence on the true effectiveness of audits (Khwaja, Awasthi and Loeprick, 2011). Much of this information can also be equally useful for conducting audits post selection. Cross-checking of purchases and sales is, in principle, a feature that tax administrations can use for VAT audits in particular. However, Cnossen (2019) argues that matching invoices is often a step too far for countries

in Africa, which may be better off investing resources in more fundamental administrative processes.

It is also worth mentioning that alongside a robust audit system, there are some lower-cost interventions that can also encourage tax compliance. There is a range of research suggesting that email or letter reminders increase tax payments across different tax types in a highly cost-effective way (Antinyan and Astrayan, 2019).

## Information reporting

As referenced at various points above, the availability, quality and use of information from different sources can significantly improve enforcement efforts and VAT compliance.

Broadly, one important arm is concerned with increased digitisation and automation of information reporting, which can thicken the metaphorical paper trail available for tax enforcement. Technological changes which increase the amount of information shared with the tax authority – such as EBMs or e-invoicing – have been shown to increase reported sales and revenues in varied contexts, with the latter now appearing particularly appealing given lower costs of implementation. Elsewhere, there is some evidence that the adoption of electronic payments in local areas leads to increased reported sales by businesses (Das et al., 2022; Adhikari, Alm and Harris, 2021). Presumably, such effects come about through taxpayer perceptions of enforcement risks. But there are also cautionary tales on the limitations of additional reporting: evidence from Uganda from Almunia et al. (2021) shows significant discrepancies between businesses' reporting on the same transaction, with sellers and buyers reporting different amounts in over three-quarters (79%) of transactions, thus highlighting how systems need to be put in place to verify these data. Overall, these mismatches acted to reduce revenues (reported output VAT amounts were, on average, lower than the corresponding reported input VAT amounts), but in a substantial minority of cases the opposite was true, leading to some transactions to be 'over-taxed'. A system to cross-check output and input VAT which can flag systematic patterns of under- and over-taxation for checks with taxpayers and potentially audits could therefore maximise the value of these systems for reducing fraud and error.

A second important arm of information reporting is to help address the aforementioned last-mile problem. Interventions on this dimension have introduced incentives for consumers to demand VAT receipts in order to ensure VAT is charged, creating a paper trail for B2C sales. One example is to use VAT receipts as entries into lotteries: Naritomi (2019) finds that such a scheme in Brazil raised net revenues by 9.3% over 4 years. However, the take-up of VAT rebates or lottery schemes can be hampered by knowledge and 'price penalties' (Naritomi

and Jensen, 2018). Providing tax rebates to consumers with VAT receipts is an alternative policy which could be considered.

### VAT withholding

One popular area of reform in recent years has been VAT withholding, whereby the government appoints certain organisations – usually large organisations and businesses, including government departments – to directly remit (part of) the VAT they pay on input purchases to the government, and issue a withholding VAT certificate to the supplier, who can claim this tax back. The idea of this is to expand the effective apparatus of the tax administration, enforce effective tax payments by non-compliant sellers, and encourage businesses to register for VAT so that they can claim their due credits.

Such schemes are highly likely to increase revenues, at least in the short term – see Brockmeyer and Hernandez (2016) for evidence from Costa Rica. However, they do also carry costs. For taxpayers, these include higher compliance burdens and lower liquidity, and potentially higher ETRs in cases where withheld taxes generate refund claims which are not fulfilled. For the tax authority, they include the need to audit withholding agents (which can include government agencies) and the extra administrative costs generated by additional refund claims. These costs and benefits thus need to be carefully considered, with particular attention paid to the level of the withholding tax rate applied.

## VAT refunds

The invoice-credit system means that legitimate VAT refunds are an intrinsic part of VAT systems. They are likely to be particularly common for exporters whose output is typically zero-rated, and for taxpayers making large investments. If refunds do not work well, then businesses undertaking these activities – both of which are drivers of development – will be penalised. If legitimate refund claims are not paid, then the design principles of VAT break down, as intermediate transactions bear some of the VAT burden. At the same time, refunds create scope for fraud, and governments can have incentives to delay refunds if short of cash. Thus, managing VAT refunds is a difficult balancing act, especially in developing economies. Harrison and Krelove (2005) – who refer to the refund process as the 'Achilles heel' of the VAT – describe key challenges and best practice in this domain in detail.

### Prevalence

The level of legitimate refunds a particular country should expect to pay out depends on a number of factors. These include levels of investment and exports, and value added. In economies that export a lot and invest a lot (e.g., high-growth economies), the level of legitimate refunds required can be substantial. Ebrill et al. (2001) set out a formula to

describe the level of refunds that can be expected given the structure of a particular economy, and show indicative calculations that a country with an investment ratio of 10% and exports of 40% of GDP could expect to pay refunds equal to around 70% of net collections. At that time VAT refunds in France were around 40% of net collections, and in Sweden they were 80%. Such calculations and examples drive home the fact that under VAT, tax authorities must be prepared and resourced to pay out refunds in a timely way. A starting point is to have processes in place to budget for, forecast, and track total refunds paid out. Budgeting for VAT refunds may come out of gross VAT collections or budget expenditure. Harrison and Krelove (2005) stress the need to have forecasting and monitoring systems set up to ensure sufficient funds are available and compare anticipated and realised claims and payments as a starting point for understanding deviations to upside and downside.

## Processing

The ideal form of VAT refund processing, in the absence of fraudulent claims, would immediately be paid after the excess credit is generated, but this is neither typically realistic nor recommended in practice. Often carry-forward periods are imposed, requiring excess credits to be offset against tax liabilities generated in future months – at least for specific types of taxpayers (e.g., non-exporters). Although this may cause cash-flow problems for some businesses, when administrative resources are stretched, on balance this is probably a sensible approach to managing the risk of fraud and administrative costs. It is common in many countries, with carry-forward periods often falling between 3 and 6 months before credits will be paid out as refunds. There can also be a case for allowing taxpayers to offset refunds against other tax liabilities, subject to sound accounting practices. Among those eligible for refunds, statutory deadlines should be imposed for payment, in order to ensure tax authorities are under obligation to compensate taxpayers their due credit. However, often statutory deadlines are not met (Harrison and Krelove, 2005). To reduce the risk of missing these deadlines, they recommend that tax authorities report publicly on their performance.

Non-payment of refunds and slow refund processing and payment can be costly – according to PwC and the World Bank (2020), it took a case study firm in Côte d'Ivoire an average of 64 hours to comply with a VAT refund claim and over 54 weeks to obtain the refund, for example. In 2013, low-income countries paid on average over 60% of the value claimed through VAT refunds, lower middle-income countries paid around 70%, and upper middle-income countries paid over 80% (Cleary, Crandall and Masters, 2017). As discussed earlier, digitisation and automation can in principle improve the quality and availability of information required to process refunds. However, the process also needs organisational and political support for refunds as a legitimate and important function, including sufficient budgeting for refunds. One common and worthwhile policy is fast-tracked refund regimes for

specific taxpayers with a history of compliance and legitimate refund claims – though such schemes also require ongoing monitoring and enforcement too.

## Enforcement

Effective monitoring and enforcement for VAT refunds depends in part on other aspects of policy and administration. For instance, the registration threshold will be a factor in the number of businesses that require monitoring, and a stretched tax administration may thus want to consider a relatively high threshold to ensure that VAT payers are manageable. A robust VAT registration system also acts as a first line of defence against refund fraud. There are also a number of recommended practices for minimising fraud that are specific to the management of the refund system itself. The tax authority should have systems in place to risk-assess refund claims, given taxpayer characteristics (e.g., sector) and past filing behaviour. Digitised data and third-party information can be a powerful way of checking refund claims (e.g., using customs data for exporters). Crucially, resources for monitoring and enforcement of VAT refunds need to be spread widely and integrated into wider audit plans. Refund audits should not focus only on the pre-payment stage, which is likely to be inefficient and costly for taxpayers. Instead, tax authorities should focus on specific issues and periods rather than being totally comprehensive, freeing up resources for monitoring more taxpayers.

When false refund claims are uncovered, this should be prosecuted through the courts. When refund claims are not paid out, taxpayers need to be able to appeal against such decisions by the tax authority.

# 3. Evaluation of Ghana's VAT policy design

This section evaluates the design of Ghana's VAT system. In this vein it discusses the evolution of Ghana's VAT system and highlights in particular the key policy changes introduced in recent years. It also provides an overview of the main design features of the system, and highlights strengths and weaknesses with reference to economic principles, international benchmarking and empirical analysis where possible.

Overall, the design of the *standard* VAT regime in Ghana is in line with normal international best practice with regard to using the destination principle and operating an invoice-credit system. However, the prevalence of a long list of VAT exemptions is likely to undermine both revenue collection and efficiency to a significant degree. Even more substantially, the presence of other expenditure-based taxes (henceforth referred to as *levies*) which operate parallel to the VAT system and which do not permit input tax deduction is a significant departure from the principles underlying the design of VAT. While such taxes may raise revenue in the short term, they are likely to be detrimental to production efficiency and tax compliance, which will have knock-on effects for revenue collections over time. There are opportunities to build on the relative strengths of the system outlined below (for instance the VAT withholding) and the recent positive changes to the VFRS and address some of the current challenges to increase the overall efficiency of the system.

## Overview

The value-added tax system was first introduced in Ghana in 1995 by the Value Added Tax Act, 1994 (Act 486) as part of the Tax Reform Programme which commenced in 1993. The system was short-lived, however, as it was suspended by the government just 3 months after it was introduced in response to a general public outcry against rising food prices in the country. In 1998, the VAT system was reintroduced under the Value Added Tax Act, 1998 (Act 546) and Value Added Tax Regulation, 1998 (Legislative Instrument 1646) to replace the sales and service taxes which were previously administered by the Customs, Excise and

Preventive Service and the Internal Revenue Service.[8] This Act was replaced in 2013 by the Value Added Tax Act, 2013 (Act 870) which changed, among other things, the set of businesses which had to register for VAT.

Since its introduction, the VAT system has gone through several phases of reforms including changes in the standard rate, the registration threshold, the list of exempt supplies and the introduction of the VAT Flat Rate Scheme (VFRS). The standard rate was increased from 10% in 1998 to 12.5% in 2000 and further to 15% in 2013, with the parallel National Health Insurance Levy (NHIL) introduced at a rate of 2.5% in 2003.

Significant reforms which have occurred in the last 10 years and which are discussed in detail in this report are outlined in chronological order below.

## The introduction of the VFRS (2017)

The VFRS was reintroduced in May 2017 for businesses in the retail and wholesale sector. When introduced, it involved charging a rate of 3% on sales but without the ability to reclaim input VAT. Until late 2022, there was no maximum size threshold for businesses in the VFRS, but since then, it has been restricted to retailers with a turnover of between GHS 200,000 and GHS 500,000.[9] This latter change was announced and came into effect too late for the data following it to be taken into account in our analysis (the bulk of which took place before November 2022).

## The NHIL, GETFL and CHL levies (2018 and 2021)

In May 2018, the NHIL was turned into a 'straight levy', which means that VAT-registered businesses can no longer reclaim the NHIL paid on their input purchases. At the same time, the 2.5% Ghana Education Trust Levy (GETFL), which was part of the standard VAT rate, was separated into an unreclaimable levy.[10] In addition, the temporary COVID-19 Health Recovery Levy (CHL) was introduced in 2021, applying a further unreclaimable tax of 1% to both standard VAT and VFRS taxpayers. Ghana's original VAT regime has therefore evolved into separate tax components – the standard VAT, VFRS, NHIL GETFL and the CHL. Given the coevolution of these components of Ghana's indirect tax regime, and the

[8] The Customs, Excise, and Preventive Service (Management) (Amendment) (No. 2) Act, 1995 (Act 500), the Service Tax Act, 1995 (Act 501) and the Service Tax (Amendment) Act, 1997 (Act 529) were therefore repealed with the coming into force of Act 546.

[9] It is worth nothing that the VFRS was first introduced in 2007 under Act 734, amended in 2010 (Act 810), and suspended in 2014 under Act 870 before its reintroduction in 2017 by Act 948.

[10] Prior to 1 August 2018, the VAT rate in Ghana was 15%, with 2.5 percentage points of this reserved for the Ghana Education Trust Fund (GETFund). In 2018, this was formalised with the creation of the GETFund Levy which was separated from VAT and made a straight levy, thus reducing the VAT rate to 12.5%.

important implications of the levies for VAT policy and revenues, we consider all of these levies together as part of Ghana's VAT and levies system, and analyse them in this report.

Note that products that are exempt from VAT are also exempt from these levies, and businesses operating under the VFRS are not required to charge NHIL and GETFL.

### The 2023 Budget VAT rate increase

Alongside the restriction of the VFRS to small retailers and wholesalers, the 2023 Budget announced an increase in the standard rate of VAT of 2.5 percentage points from 12.5% to 15.0% (alongside levies amounting to 6%). This VAT rate change took place too recently to be reflected in our analysis (which was undertaken largely before November 2022).

# Main design features

Our review of the main design features begins with Ghana's standard VAT regime. However, often there are overlaps between the features of the standard VAT and the other taxes that we consider as part of the same regime. We endeavour to draw out these overlaps where possible but also consider the parallel taxes and levies on their own merits towards the end of the section.

## Taxable base

As discussion in Section 2, VAT is designed to be charged on the value added at each stage of production. The idea is that reclaim of VAT paid on B2B sales ensures that this fractional collection of the tax results in the final tax base being consumption. However, the definition of a taxable supply/activity and a taxable person affect the tax base in practice. Ghana's VAT is charged on the supply of goods or services made in Ghana when this supply is made by a taxable person, and also on imported goods or services (other than exempt goods and services).[11]

In line with international best practice, Ghana uses the destination principle, meaning that imports are subject to VAT, but exports are zero-rated. For taxable imports of services, the tax base for VAT is the open market value of the service provided. For taxable imports of goods, the tax base for VAT includes the cost, insurance and freight (CIF) value of the import plus all other taxes and levies applied.

[11] Box A.2 in the Appendix provides greater detail on taxable supplies as clarified in the VAT Act.

For domestic supplies, a taxable person is broadly defined as someone who is registered or is required to register, according to the criteria regarding taxable supplies, for instance, stipulated in the Act. This ensures neutrality over organisational form and is desirable. The Act also requires that all national, regional, local or other authorities or bodies carrying out any taxable activity must register. For these taxable persons, the value of a taxable supply on which VAT is assessed is the sum of the monetary value of the supply, and all duties and other taxes or fees. In the case of payment in kind, the VAT payable is calculated based on the open market value of similar supplies excluding VAT.

VAT is paid by taxable persons/businesses making taxable supplies, by the importer in the case of imported goods and by the receiver of the service in the case of an imported service. Thus, the taxable person acts as the government's agent and collects VAT on its behalf. In line with the experiences of most other countries with a VAT system, Ghana operates an invoice-credit system whereby VAT-registered businesses are required to issue tax invoices to the customers or persons supplied and may deduct the VAT paid on their inputs from the output VAT charged and remit only the net amount to the Ghana Revenue Authority. As discussed in Section 2, this creates asymmetric incentives for evasion between upstream and downstream sellers, and generates a withholding mechanism in the supply chain. When VAT paid on inputs exceeds that charged on sales, taxpayers generate a VAT credit. In general, this credit carries forward and can be offset against VAT liability in future. Businesses that receive more than 25% of their income from exports, and that have credits persisting for more than 3 months, may receive VAT refunds, however.

In principle, the possibility of matching invoices using the invoice-credit system could substantially reduce opportunities for tax fraud, such as undeclared VAT receipts on sales or inflated VAT credits on purchases. However, this benefit is contingent on the revenue authority having sufficient information and resources to cross-check (some) invoices, which is not a given. Thus, there are strong interactions with VAT administration in terms of the effectiveness of this feature.[12]

Though this initial definition and calculation of the tax base and associated payment are broad, a number of factors act to reduce the tax base in practice. Exempt supplies are a prominent feature in Ghana, and affect the taxable base significantly. Moreover, registering

[12] A simpler, less widely used method of determining VAT liability is the subtraction method, which is an entity-based approach utilising each entity's revenue and expense figures, without needing detailed information on inputs and sales. This approach, which is more suited to an origin-based form of taxation, has only been used in Japan in practice.

only becomes mandatory once taxable supplies exceed a certain threshold, currently GHS 200,000 per year.

In addition, there are a number of exemptions for taxable supplies made to specified individuals, organisations and businesses as specified in the Third Schedule of the Value Added Tax Act, 2013 (Act 870); such supplies are termed 'relief supplies' and the types of organisations covered by these provisions are listed in Box A.3 in the Appendix. For these types of organisations, exemptions from VAT may be granted on taxable goods and services supplied to them (for use as inputs), both for domestic and imported goods and services. Using administrative import data, it is clear that different types of importers pay very different amounts of VAT, and these reliefs are likely to be part of this picture (Table 3.1), though differences in types of goods imported may also be a factor. Some of these reliefs are based on reciprocal arrangements. For organisations or persons receiving these reliefs, there is a requirement to charge VAT on the value of their own supplies. The appropriateness of exemptions for relief supplies is likely to vary. For instance, for government agencies providing services without charge, these reliefs avoid the need for refunds and may help with cash flow for the targeted agencies. However, for organisations providing services in competition with the private sector, there are potential concerns about distortions to competition, since private sector providers will not in general enjoy the same reliefs. For international organisations, exemptions mean that some of their expenditures (and those of their employees) can be completely untaxed in Ghana, and represent forgone revenue. In all cases these exemptions for relief supplies require careful monitoring to avoid fraud and abuse.

### Table 3.1. Value of imported goods and VAT paid, by organisation type (2016–2019)

| Organisation type | CIF (mn) | VAT (mn) | Effective VAT rate |
|---|---|---|---|
| Companies | 183,000 | 13,300 | 7.28% |
| Government | 7,021 | 92 | 1.31% |
| Individuals | 27,050 | 4,430 | 16.39% |
| Foreign Missions | 1,642 | 2 | 0.10% |
| Public Institutions | 11,020 | 156 | 1.41% |

Note: Includes only imports for domestic consumption (customs procedure codes in the range 40–49). Figures may not match exactly due to rounding.

Source: Ghana Customs Management System (GCMS).

Rules on what is allowed for input tax deduction also affect the taxable base. For instance, the Value Added Tax Act stipulates that only input purchases made within 6 months prior to the date of filing a return can be deducted.[13] Input tax deductions are also not allowed for the supply or import of motor vehicles or vehicle spare parts for persons not dealing in the sale or hire of motor vehicles or selling vehicle spare parts, and for the supply of entertainment including restaurant, meals and hotel expenses unless the taxable person is in the business of providing entertainment.

## Rate and (lack of) rate differentiation

VAT is charged on the value of the taxable supply of goods, services or taxable imports. Prior to January 2023, the standard VAT rate in Ghana stood at 12.5%. This was increased to 15% in January 2023 following the passage of the Value Added Tax, (Amendment) No. 2 Act, 2022 (Act 1087) in December 2022. However, for the purpose of international comparisons, we use the rate that prevailed prior to 2023 and include the NHIL, GETFL and CHL as well, since they apply to the same set of goods and services. At a standard VAT rate of 12.5%, and accounting for the combined 6% rates of these levies, the combined sales tax rate *applied on non-B2B sales* is 19.25%, as VAT applies on top of the levies.[14] This is the rate we take as the headline measure of the combined sales tax rate for Ghana as of 2022. However, we should also note that this is likely a *lower bound* on the full *effective* combined sales tax rate for formal sector purchases. This is because unreclaimable taxes paid on inputs at earlier stages of production can become embedded in the production chain in Ghana for a number of reasons, including widespread exemptions (both statutory and effective, for example due to informal businesses) and most notably the NHIL, GETFL and CHL, which act as turnover taxes and thus are collected at each stage of production.

Ghana's combined sales tax rate has increased several times since the early 2000s. Figure 3.1 presents trends in Ghana's VAT rate since 2011, alongside its combined sales tax rate and regional and global averages for VAT (specifically, the median among countries with available data).[15] Between 2013 and 2021, Ghana's sales tax rate increased by 4.25 percentage points to hit 19.25% in 2021. This increase is driven by a 2.5 percentage point increase in statutory VAT in 2013 and more recently from changes to levies that apply to the

[13] Act 870 states: 'A claim for a refund shall be made within six months after the date on which the excess arose.'

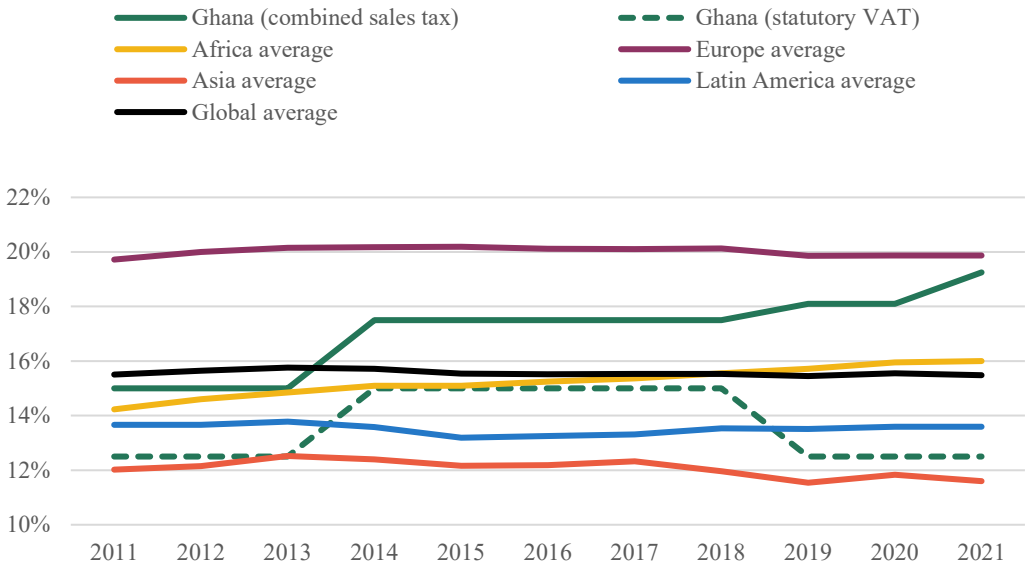
[14] A 15% standard VAT rate yields a combined sales tax rate of 21.9% (= 0.15 × 1.06 + 0.06). It is important to note that the combined sales tax rate is used here only for purposes of comparison and must not be read as the standard VAT rate in Ghana.

[15] We compare Ghana's combined sales tax rate to the standard VAT rate in other countries and regions, noting that it is unusual to have multiple broad-based domestic indirect taxes as Ghana does. Thus, while there may be some countries that have multiple such taxes, such that using the standard VAT rate alone will underestimate the total sales tax burden, we do not expect this to have a significant impact on this exposition.

same goods and services as statutory VAT but can now no longer be reclaimed. As a result, there has been a notable divergence between Ghana's statutory VAT rate and the total sales tax rate since 2018.

Though Ghana's combined sales tax rate was comparable to that of the African and global average rates in 2011 and 2012, recent reforms have pushed Ghana's combined sales tax rate significantly above the average rates for Africa, Asia and Latin America, and closer to the relatively high average rates in European economies (the median for which is approximately 21%).

### Figure 3.1. Standard VAT/sales tax rates over time



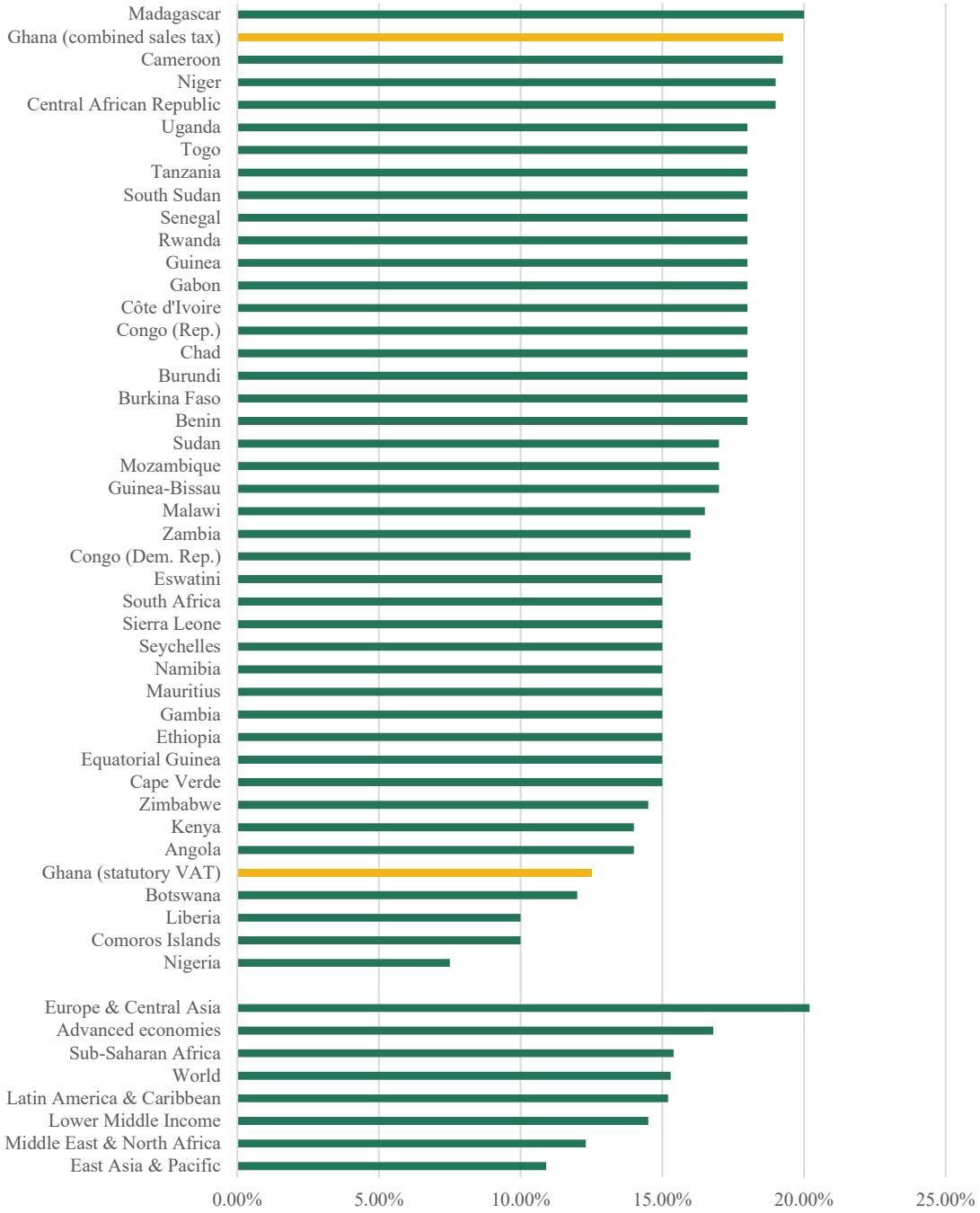

Note: Based on countries available in the KPMG dataset. As of 2021, this included 150 countries in total. These do not necessarily constitute a representative sample. The graph shows the median headline VAT for each region according to countries within the sample. For Ghana, we use the rate in place at the beginning of each calendar year.

Source: KPMG and GRA.

Figure 3.2 highlights the degree of variation in sub-Saharan African countries, and the importance of the parallel levies in Ghana's tax system for its position in the continental distribution of sales tax rates. If only focusing on the pre-January 2023 statutory VAT rate of 12.5%, Ghana has one of the lowest rates in sub-Saharan Africa. However, incorporating the impact of the NHIL, GETFL and CHL suggests that only Madagascar has a higher headline sales tax rate. Overall, there are a few sub-Saharan African countries (e.g., Niger, Cameroon and Madagascar) with comparable rates to Ghana and a few standout cases of very low rates (e.g., Nigeria), but most sub-Saharan African countries maintain a sales tax rate of between

15% and 20%, and none go higher than this. This reflects a pattern of regional clustering in VAT rates. The IMF has also noted that newer VAT systems tend to have lower rates; over time, these may increase (IMF, n.d).

## Figure 3.2. VAT / sales tax rates in sub-Saharan African countries

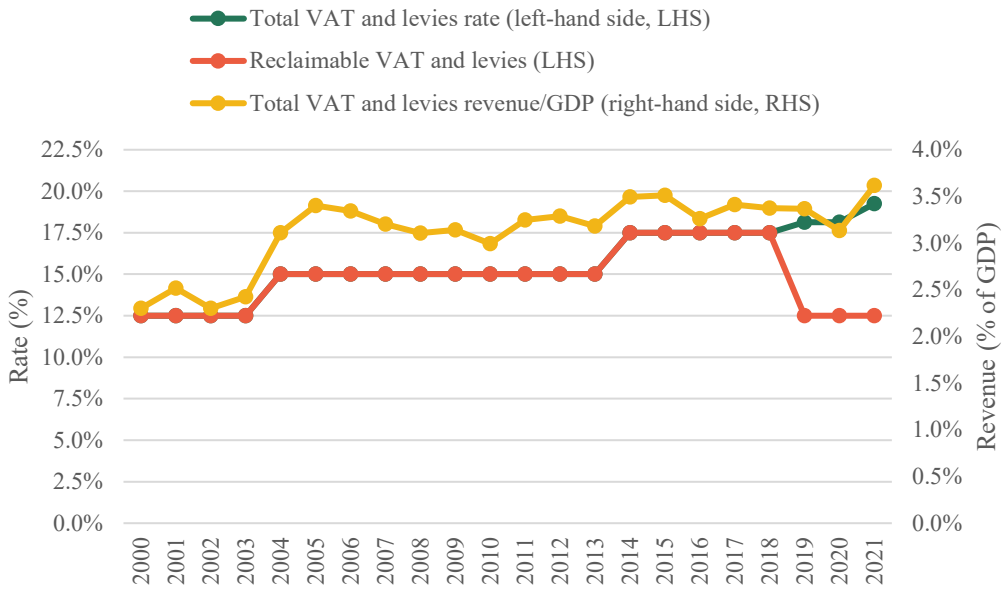



Note: Regional averages are based on unweighted averages and the sample differs from that in Figure 3.1; thus, figures will not necessarily be the same. Year is not provided in the underlying data. The figures for Ghana relate to 2022.

Source: IMF Tax Policy Assessment Framework, https://www.imf.org/en/Data/TPAF (click on VAT > Design > VAT rates > What is the standard VAT rate?).

In most cases, increases in tax rates are likely driven by a need or desire to raise more tax revenue. As such, understanding how changes in Ghana's VAT rate relates to that of its revenue yield is important. While we explore this in greater detail later on in Section 5, an initial exploration of this relationship is shown in Figure 3.3 at the annual level. This simple exercise already yields some interesting patterns. For the rate increases implemented in 2004 and 2014,[16] there does appear to be a positive association between revenue as a share of GDP and increases in the combined sales tax rate. However, in more recent years there is a notable decoupling of revenue collections from the combined rate, which has continued to increase, while revenues as a share of GDP decreased in years prior to 2021. In 2021, revenue as a share of GDP increased along with the increase in the combined sales tax rate.

### Figure 3.3. Combined VAT and levy rate and revenues in Ghana, 2000–2020




Note: Total sales tax rate includes both the NHIL and GETFL, where applicable, and corresponds to the rate in place at the beginning of the calendar year. 'VAT revenue' includes the revenues from these levies, net of VAT refunds.

Source: Ghana Revenue Authority and Ministry of Finance.

For domestic consumption, all goods and services are subject to the same rate except those that are either exempt from VAT or are sold by businesses registered for the VFRS scheme. That is, Ghana's VAT system does not provide for reduced (or conversely, higher) rates for goods and services in the country. Many countries around the world, on the other hand, apply

[16] Note that the VAT rate series in the figure uses the total rate in place at the beginning of the corresponding calendar year.

a range of different rates to VATable sales. It is common for there to be lower rates for certain goods or services – perhaps because of distributional objectives, or because the good or service carries broader social benefits, as discussed in Section 2. A smaller set of countries also set additional, higher rates of VAT, possibly because the good or service carries social costs or is perceived as a 'luxury good'. For instance, in Brazil, the VAT rate varies from 0% to 300% depending on the type of good under consideration. In some cases, differential VAT rates across localities exist – for example, Portugal applies a reduced VAT rate of 16% and 22% for transactions made in the Azores and Madeira regions, respectively, compared to 23% in the rest of the country. Austria and Pakistan also apply differential VAT rates across localities. Overall, the IMF estimates that only 9% of jurisdictions have neither reduced nor increased VAT rates (though importantly, it is not clear if this includes zero-rating for exports) (IMF, n.d.).

As discussed in Section 2, for the most part differential VAT rates are not likely to be well suited for achieving their desired objective. The design of the VAT system means that VAT rates are a poor way of targeting externalities and a blunt way of redistributing resources. Moreover, unlike a uniform VAT rate system, a differentiated VAT rate regime can increase compliance and administration costs and result in unwanted distortions from both consumers and producers (Keen et al., 2011). Differential rates increase the cost of implementation for both taxpayers and tax authorities as transactions will need to be categorised by the applicable rate, with implications for the appropriate determination of tax liabilities or refunds. From an efficiency perspective, though, there may be cases where lower rates of VAT can be justified, such as for goods or services where consumers and producers can switch to informal purchases very easily, or when the price of a good or service has a big impact on work incentives. In such cases, using reduced rates of VAT might be advisable in Ghana rather than using full exemptions, which we return to shortly.

## Exemptions

The VAT system in Ghana provides for a range of exempt supplies (see Box 3.1). Businesses selling these goods and services do not charge VAT (or the NHIL, GETFL or CHL) on these sales but also cannot claim input tax credit on their purchases. This also applies to the importation of similar goods. Where taxpayers make both taxable and exempt sales, they should claim full input tax credits on purchases directly attributable to their exempt supplies. For input tax not directly attributable to either exempt or taxable supplies, the input tax credit due is determined in proportion to the taxable supplies versus exempt supplies.

In general, an explicit policy rationale is not provided for these exemptions. However, they are likely to have varied objectives. Some are likely to be motivated by administrative considerations, such as financial services where there is no fee and thus no immediately obvious price. Exemptions for basic goods and services such as foodstuffs, water and electricity may be motivated by equity considerations, including a desire to increase the progressivity of VAT. And other exemptions may be in place to reduce the cost of goods and services thought to have positive externalities, including pharmaceutical products and mosquito nets.

Box 3.1. VAT exempt supplies

- A range of raw (or simply prepared or preserved) food products such as maize, rice, millet, sorghum, fruits, vegetables, fish and meat
- Selected live animals (i.e., cattle, sheep, goats, swine and poultry) bred or raised in Ghana
- Specified agricultural and fishing inputs
- Water supply (excluding bottled water)
- Electricity supply (not exceeding the maximum consumption level specified for block charges for lifeline units)
- Approved textbooks and newspapers, atlases, charts, maps and music (excluding similar imported items, such as newspapers, magazines, greeting cards, calendars and stationery)
- Education services and related equipment
- Medical services and supplies
- Supply of specified pharmaceuticals by retail in Ghana.
- Domestic passenger transport by air, road, rail or water (excluding haulage or rental or hiring of passenger and other vehicles)
- Machinery used in specified activities
- Petrol, diesel, liquefied petroleum gas, natural petroleum gas, and kerosene
- Financial services where no fee is paid, and life insurance and reinsurance
- Land used for specified purposes (including for agricultural activities)
- Goods designed for persons with disability
- Postage stamps issued by Ghana Post
- Salt for human consumption
- Mosquito nets
- Plant and machinery, and kits designed for use by registered manufacturer or assembler under the Ghana Automotive Manufacturing Programme
- Management fees charged by local fund managers for management of a licensed private equity fund, venture capital fund or mutual fund
- Sale of immovable property by real estate developers
- Supply of crude oil and residual fuel

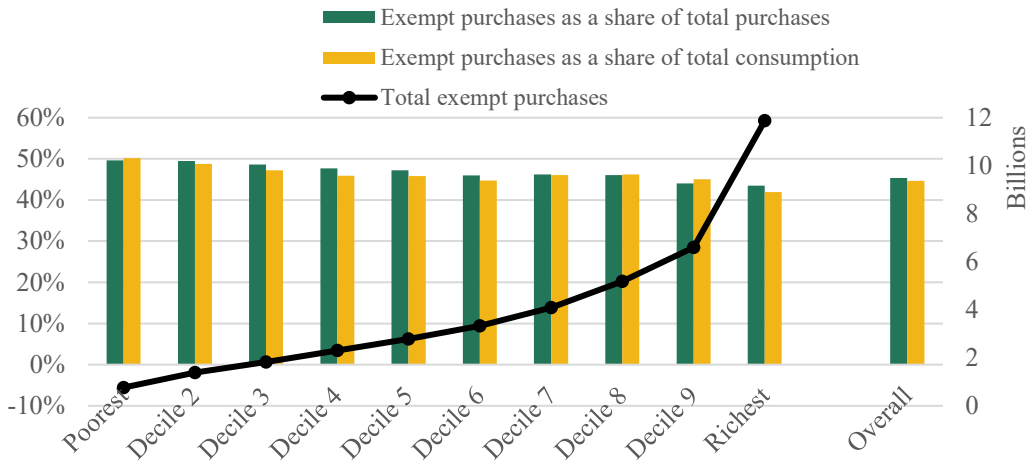
The list of VAT exempt supplies in Ghana is long, which is likely a major constraint in terms of revenue performance, as well as being a source of distortions in production and consumption. Figure 3.4 shows that overall, goods and services that are exempt from VAT account for nearly half of household consumption in Ghana – a total of GHS 43.2 billion in

2016/17 based on household survey data. This share is higher for poorer households – on aggregate Ghana's VAT exemptions are tilted towards purchases that make up a larger share of the budgets of poorer households.

This does not imply that these exemptions are progressive overall, however, let alone that they are an effective tool for redistribution. Warwick et al. (2022) use a microsimulation model integrated with Ghana's Social Accounting Matrix (SAM) to estimate the effect of removing Ghana's VAT exemptions, excluding those that appear to be in place for administrative reasons – public services, real estate, financial services and small traders. Their analysis accounts for the supply chain effects of VAT exemptions, and finds that these non-administrative related exemptions are relatively distributionally neutral overall.[17] Moreover, because richer households spend much more overall, the total benefit from exemptions in cash terms is largely captured by richer households. Figure 3.4 gives a sense of this: the richest 10% of households in Ghana spent more than GHS 12 billion on exempt goods and services in 2016/17 – more than 14 times higher than the GHS 0.8 billion spent by the poorest 10%. This suggests that if the revenue forgone from these exemptions were collected, redistributing this revenue (e.g., in the form of cash transfers or public service provision) would easily be enough to compensate poor households in theory, and with significant revenues to spare. Indeed, this is exactly what Warwick et al. (2022) find when simulating the introduction of a hypothetical universal cash transfer scheme funded by the revenue gain.

[17] This analysis used the 6th round of the Ghana Living Standards Survey (GLSS) and thus may be expected to yield slightly different patterns to an analysis that is based on GLSS7.

## Figure 3.4. Exempt and non-exempt goods and services in household purchases, by consumption decile (2016/17)




Note: Figure shows estimated share of household purchases on exempt goods and services as defined in the law – non-compliance and small traders are not accounted for. Total purchases include all monetary purchases; total consumption includes household consumption as calculated by the Ghana Statistical Service, accounting for consumption out of own production and imputed values for rent and durables. Households are ranked by equivalised consumption and sorted into ten deciles of equal population size.

Source: Authors' calculation based on Ghana Living Standards Survey Round 7 (GLSS7).

These analyses focus on household consumption patterns and the targeting of exemptions according to the treatment of goods and services as written in law. In practice, the distributional gain from VAT exemptions across households may be even less progressive than Figure 3.4 or Warwick et al. (2022) suggest. This is because, again as discussed in Section 2, there is a consistent pattern across LMICs of purchasing from informal or tax-evading sellers being more prevalent among poorer households, on average (Bachas, Gadenne and Jensen, 2023). While direct evidence for Ghana is not available on this margin, there is no reason to think that a different pattern would exist here. This pattern implies that the de facto benefit from VAT exemptions is relatively greater for richer households than consumption profiles suggest, and less beneficial for poorer households.

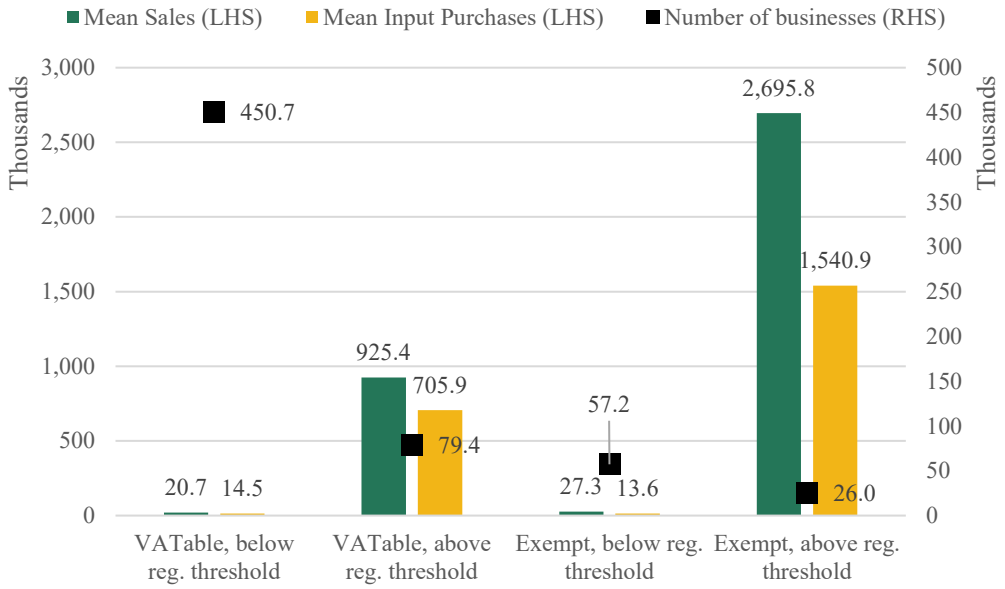
Of course, understanding the full role of VAT exemptions in Ghana requires looking at production as well. Tax data are limited for this purpose since businesses selling exempt goods do not need to file tax returns. Indeed, our analysis of tax returns in the trips™ system shows that very few businesses – especially smaller businesses – report their sales of exempt goods, despite there being a line for this in the tax return (see Figure A.1 in the Appendix). Because of this, other data sources are needed to understand the role of VAT exemptions.

Using business survey data, Figure 3.5 estimates total sales and total purchases made by businesses selling (mostly) VATable and (mostly) exempt goods and services, as of 2013 when the Value Added Tax Act was introduced. This analysis is necessarily approximate, as it requires declaring an individual business as 'exempt' or 'VATable' according to their industrial sector because the data do not provide detailed information on goods and services sold.

Nonetheless, it does reveal some striking findings. First, in terms of the total number of businesses, the vast majority are in principle VATable, although most of these have sales below the compulsory registration threshold (GHS 120,000 at the time of data collection in 2013).[18] Overall, this analysis estimates that there are around 26,000 business selling mostly exempt goods with total sales above the compulsory registration threshold. Second, despite the relatively small number of businesses, exempt businesses account for a very large share (51% in the raw data; 74% if winsorising at the 99th percentile of sales) of total revenue in Ghana. This is because businesses selling exempt goods and services are on average larger than VATable business – this is driven by sectors such as oil, construction and financial services, which are overrepresented among the very largest businesses. The unadjusted figure is a very similar share to that estimated in household consumption data. Finally, it is interesting to note that exempt businesses report a much lower level of input purchases than VATable businesses – the average ratios of material inputs to revenues for businesses above the registration threshold are 57% and 76%, respectively. We cannot draw strong conclusions from this, since we do not observe tax registration or payments, and have no way of determining causality. However, this may be suggestive of the fact that exempt businesses cannot reclaim tax on their inputs, and thus have an incentive to reduce input purchases.

[18] It should be noted, though, that the data source used only includes permanent business establishments. Thus, small traders without a permanent location (e.g., mobile market traders) are excluded. One might think that many of these would sell goods that are overwhelmingly exempt from VAT, such as basic foodstuffs.

### Figure 3.5. Sales and purchases by exempt and VATable businesses (2013)




Note: Figure shows estimated mean total sales and mean input purchases from permanent business establishments in four groups based on whether primarily selling exempt goods and services, and whether annual sales are above or below the compulsory VAT registration (reg.) threshold. Businesses are classified as exempt or VATable according to the three-digit ISIC code of the business, which is a rough approximation to their VAT status. Both sales and purchases are winsorised at the 99th percentile to reduce the impact of outliers in the results.

Source: Integrated Business Establishment Survey Phase II.

Unfortunately, the Integrated Business Establishment Survey (IBES) data do not provide information on trading partners, or detailed information about inputs – both of which would be useful for studying production distortions caused by exemptions in more detail. Input–output relationships can provide a sense of which sectors are most exposed to embedded VAT at an aggregate level, however. For instance, using Ghana's 2015 SAM, sectors that appear particularly exposed to unrecoverable input with the current set of exemptions in place include water supply and sewage, electricity, gas and steam, and some agricultural sub-sectors (e.g., other livestock and other crops). These are sectors characterised by greater relative use of intermediate inputs (i.e., relatively low levels of value added), with many of these inputs in principle attracting VAT, such as manufactured goods and chemical products.

## Registration threshold

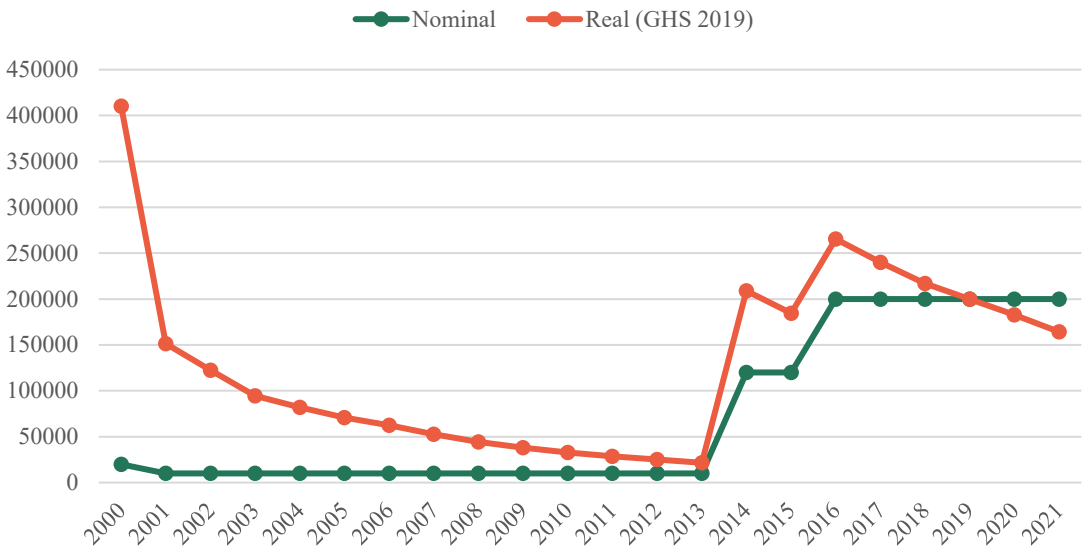
VAT registration is compulsory for taxable persons with annual taxable transactions above GHS 200,000, or above GHS 50,000 in 3 months and with reasonable grounds to expect to exceed turnover of GHS 150,000 in the next consecutive 9 months. Registered taxpayers are issued a certificate of registration which must be exhibited at the principal place of business

or by the taxable person. In determining the thresholds, separate businesses under the same ownership are allowed to be treated as being owned by one person. On the other hand, taxable persons who have businesses structured into distinct divisions may apply for each division to be registered for VAT separately. Registration for VAT is compulsory for any national, regional, local or other authority or body which conducts a business activity that makes it registrable as a taxable person. However, VAT registration is voluntary for businesses with an annual turnover below GHS 200,000.

When VAT was first introduced in Ghana, the registration threshold was set at GHS 2,500 per annum and later increased to GHS 20,000 per annum in 1998. Since then, the registration threshold has been subject to a series of reviews, as shown in Figure 3.6. However, relatively infrequent adjustments to Ghana's registration threshold imply year-to-year changes in the real value of the threshold, which accumulate to large effects over time. Between 2001 and 2013, the nominal value of the threshold was held fixed; this implied an 85% reduction in the real value of the threshold, given prevailing rates of inflation. Between 2016 and 2021, the real value of the threshold fell by 38% (and will have fallen substantially further since then, given high inflation over the last year). Such patterns are an example of 'bracket creep', where inflation pushes taxpayers into higher tax brackets due to an absence of inflation-indexing.

Figure 3.7 plots registration thresholds across the world. There is a wide range of registration thresholds, and many countries do not even have a registration threshold. Ghana's GHS 200,000 registration threshold was approximately $34,000 in 2021. This threshold was slightly below the world median of $42,000 and the African median of $40,000, but well within the range seen in other African and lower-middle income countries.

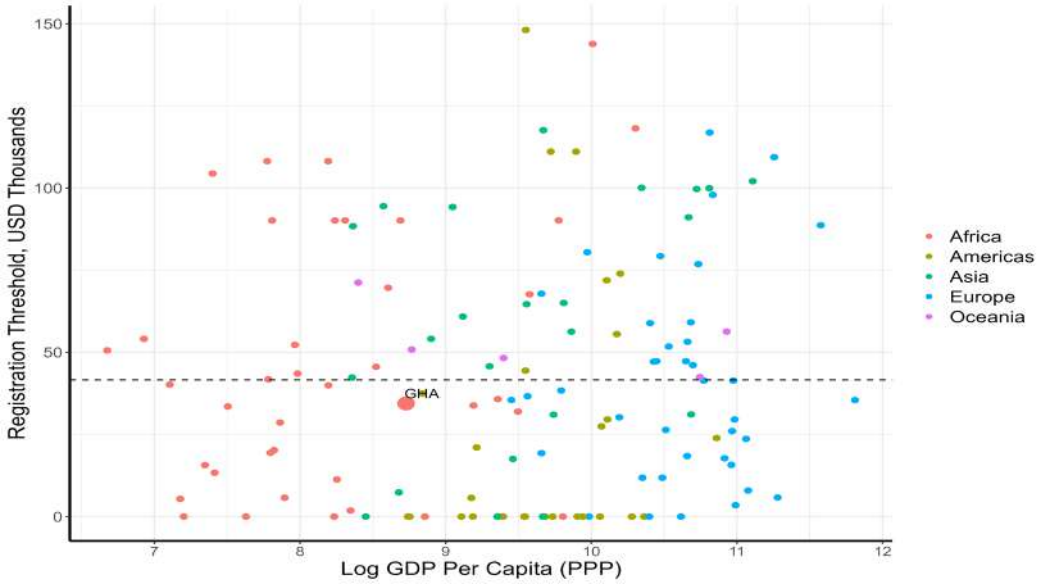
## Figure 3.6. Ghana's VAT registration threshold over time




Note: The level of the threshold at the beginning of the year is shown. Real values are based on the implied GDP deflator from Bank of Ghana GDP series.

Source: Ghana Revenue Authority, Bank of Ghana and Ghana Statistical Service.

## Figure 3.7. VAT registration thresholds around the world, 2022




Note: All values are expressed in 2021 USD. Registration thresholds are accurate as of June 2022. The dashed line shows the world median. Sample is all countries where data were available.

Source: IMF, KPMG, EY, PwC

As discussed in Section 2, when setting the VAT threshold, policymakers need to consider a trade-off.

On the one hand, a lower VAT registration threshold increases the number of businesses that are liable for VAT, resulting in higher VAT revenues as a greater share of final consumption is taxed. In principle, bringing a greater share of businesses into the VAT system can also benefit both production and revenue efficiency, by ensuring input tax reclaim is possible throughout the economy and by exploiting the revenue-efficient features of the VAT system across more businesses. As stated in Section 2, businesses outside of the VAT system create distortions in production decisions, which may be costly (De Paula and Scheinkman, 2010; Gadenne, Nandi and Rathelot, 2019).

On the other hand, bringing more businesses into the VAT system brings administration costs for the revenue authority and compliance costs for taxpayers, and these costs may be less than the revenue yield. The setting of a non-zero registration threshold is generally informed by the need to reduce such associated costs and to enhance efficiency in revenue collection.

Setting the optimal registration threshold would ideally trade off these considerations, though in practice often this is not possible to do in a convincing way. As discussed in Section 2, the work of Keen and Mintz (2004) provides one framework for exploring the optimal threshold after accounting for revenues raised and the costs of raising those revenues – but not efficiency considerations. In Box A.4 (Appendix) we illustratively set out this framework to explore an optimal registration threshold in Ghana, which requires calibrating key parameters by reference to available data where possible, and assuming plausible values based on evidence from other contexts for other parameters. These numbers are highly sensitive to the parameters, but suggests that the revenue-maximising tax registration threshold could be around GHS 200,000 (see Box A.4 for more detail).

However, in Ghana, the logic of this theoretical trade-off is substantially blunted by the fact that the majority of businesses report an annual turnover that is less than the mandatory threshold – that is, it appears that voluntary registration is widespread in Ghana. As shown in Figure 3.8, in 2016, around 42% of businesses reported taxable sales less than the registration threshold, rising to nearly 70% by 2018, possibly due to the increase in the registration threshold but also a possible artefact of the trips™ software being rolled out to more small taxpayer offices, bringing in larger numbers of small businesses in to the data sample over time. The high levels of voluntary registration may be explained by a number of reasons: businesses wishing to register for VAT to claim back input VAT (though most businesses in Ghana do not claim back input VAT, as we show below), making trade easier with existing

VAT-registered businesses, or registering in order to import commercially or bid for government contracts.[19]

New entrants (defined as those that have newly entered the VAT data) are even more likely to have a turnover less than the mandatory registration threshold, which suggests that the high levels of voluntary registration are not being driven by businesses registering for VAT and then shrinking. In general, new businesses may have particularly strong incentives to register for VAT as sales may be relatively low (or zero). As shown in Figure 3.9, there are a very large number of businesses reporting annual taxable sales close to zero, or otherwise far below the VAT registration threshold. There is also no mass of businesses *above* the threshold, which would be plausible if the threshold was strictly enforced, and thus all businesses above the threshold were registered and only a portion of those below were. In theory, voluntary registration in Ghana is at the discretion of the Commissioner-General. The large number of VAT-registered businesses with an annual turnover less than the VAT threshold suggests that this discretion is not being used to disallow registration.

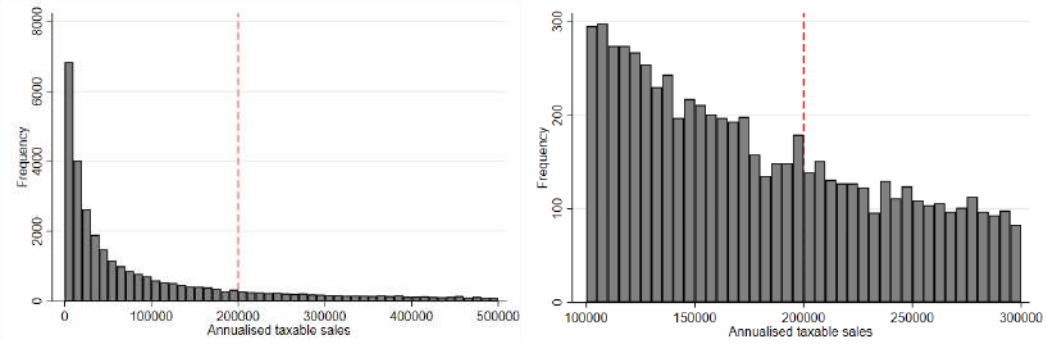
[19] These and certain other business transactions require a Tax Clearance Certificate from the GRA, issued for taxpayers that have met all of their tax obligations. For more information see https://gra.gov.gh/domestic-tax/tax-clearance-certificate/.

## Figure 3.8. Percentage of businesses with an annual turnover less than the mandatory registration threshold


Note: Includes businesses in both the standard and VFRS scheme. The registration threshold was GHS 200,000 from 2016 onwards. A business is defined as under the registration threshold if its annual sales are lower than the registration threshold. New entrants are defined as those which are in their first year in the VAT data. Nil filers and those with zero sales or purchases are excluded.

Source: Authors' calculation using data from trips™.

## Figure 3.9. Distribution of annual taxable sales among standard VAT businesses (2017–2020)




Note: Figure is calculated based on taxable sales reported in standard VAT and/or NHIL/GETFL tax returns, using mean monthly sales among tax returns observed in our sample.

Source: Authors' calculation using data from trips™.

Given all of the evidence offered in this subsection, the level of Ghana's VAT registration threshold is perhaps not one of the first priorities for reform. The reporting behaviour of businesses below the threshold, for instance, appears much more worthy of attention. Nonetheless, it may be worthwhile to consider a more systematic approach to revising the

nominal level of the threshold going forward, in order to provide greater policy certainty and temper fiscal drag, especially in a context of high and volatile inflation.

## NHIL, GETFL and CHL

The unreclaimable nature of the levies is a significant departure from the core design features of a VAT system. Indeed, many of the main desirable design features laid out in Section 2 are predicated on the fact that VAT-registered businesses can reclaim the tax paid on their inputs. This is important in terms of production efficiency – that is, minimising the impact of the tax system in distorting choices in a way that reduces output and welfare. It is also important for revenue efficiency – the reclaimability of input VAT is crucial for ensuring asymmetric incentives for evasion between upstream and downstream businesses. Ultimately, the nature of these levies moves the VAT system away from a consumption tax and towards one that falls on production as well.

The taxation of production created by these taxes creates a 'cascading effect' – that is, the accumulation of taxation throughout supply chains due to taxing items that have already been taxed. Box A.5 provides an illustration of how this cascading, which increases with the length of production chains, may lead to much higher ETRs on goods and services than the statutory rate. Ultimately, this cascading will lead to higher prices or lower returns to investment somewhere in the economy and create welfare losses:

- Consumers face higher prices as taxes accumulate in the production chain, reducing consumer welfare.
- Cascading taxes imply taxes on production. This distorts production decisions, reducing total output in the economy, and associated employment and incomes.
- Cascading taxes reduce the competitiveness of local producers compared to similar imported products. Ultimately, this may reduce exports and increase imports.

Since VAT-registered businesses cannot reclaim the levies paid on their input purchases, the levies can be expected to increase tax revenues – at least in the short run. Indeed, in Section 5 we show that these taxes have likely raised revenues. However, they also create incentives for businesses which may damage both production efficiency and revenue collected in the medium and long term. These include:

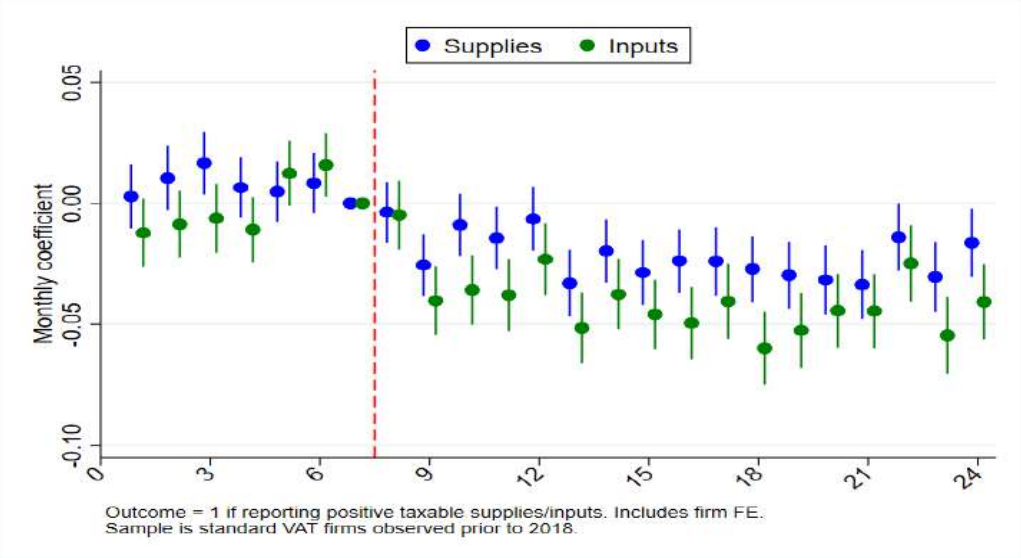
- Incentives to shorten production chains – to avoid paying a tax on inputs, businesses may decide to vertically integrate (i.e., self-supply the inputs used in their production process).[20]
- Incentives for businesses to evade taxes (including VAT) on B2B transactions. The reclaimability of a standard VAT creates asymmetric incentives between upstream sellers (who would wish to reduce reported output VAT) and downstream buyers (who would wish to reclaim input VAT). Non-reclaimable levies have no such self-enforcing mechanism, and this could spill over into compliance with the standard VAT too.

Data on B2B transactions, which some VAT systems require businesses to provide, would be the ideal data source to understand how the unreclaimable nature of these levies has impacted or distorted business behaviour. Detailed price data at the business level would be required to understand the impact of the reforms on prices. These data are not available in Ghana. However, using administrative VAT returns data can shed some light on the impact of the reforms on other aspects of the tax system. In particular, it is of interest to study how the introduction of these reforms had knock-on effects on the functioning of the standard VAT system.

Figure 3.10 shows monthly differences in the probability of businesses reporting positive taxable supplies and positive inputs in their standard VAT returns in 2018 and 2019, with the red line indicating the introduction of the unreclaimable levies in August 2018. Immediately afterwards, businesses become significantly less likely to report positive taxable sales and inputs. The probability of reporting positive taxable supplies drops by 2–3 percentage points (from a baseline of 68%) while the probability of reporting positive inputs drops by 3–4 percentage points (from a baseline of 51%). Alongside this, there is a gradual reduction in the share of businesses reporting positive VAT liabilities – for instance, one year after the reform the reduction is 5 percentage points, from a baseline of 59% (Figure 3.11). While there is no control group here, the striking temporal pattern provides strong evidence that this is related to the reform. We cannot say from these data whether the change in behaviour reflects real effects (i.e., businesses actually selling less) or reporting (i.e., reporting less to reduce their tax liability) but in either case there is a clear distortion to behaviour.

[20] A similar concern arises in turnover tax systems and with VAT exemptions – businesses supplying exempt goods have an incentive to supply their own inputs rather than buying them and incurring unrecoverable VAT.

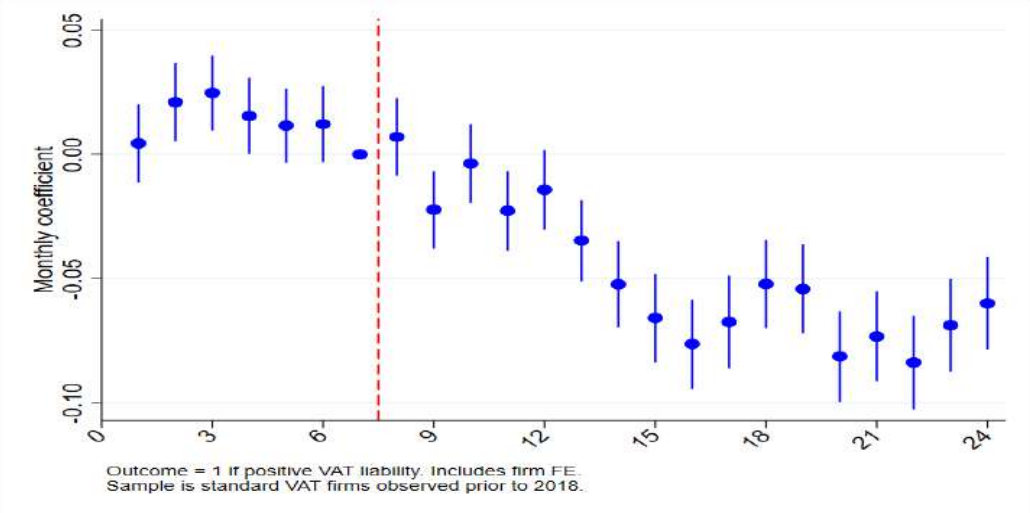
## Figure 3.10. The impact of the 2018 NHIL and GETFL reform on the probability of reporting positive taxable supplies and inputs




Note: Figures show monthly regression coefficients for standard VAT businesses, where the *x*-axis shows the number of months since December 2017. The sample includes an unbalanced panel of standard VAT businesses observed at least once before 2017. All regressions control for business fixed effects (FE), and 95% confidence intervals based on robust standard errors are shown. The outcomes are positive reported taxable supplies and inputs, and are binary variables equal to 1 if the outcome is positive.

Source: Authors' calculation using data from trips™.

## Figure 3.11. The impact of the 2018 NHIL and GETFL reform on the probability of reporting a positive tax liability




Note: Figures show monthly regression coefficients for standard VAT businesses, where the *x*-axis shows the number of months since December 2017. The sample includes an unbalanced panel of standard VAT businesses observed at least once before 2017. All regressions control for business fixed effects (FE), and 95% confidence intervals based on robust standard errors are shown. The outcome is positive reported tax liability and is a binary variable equal to 1 if the outcome is positive.

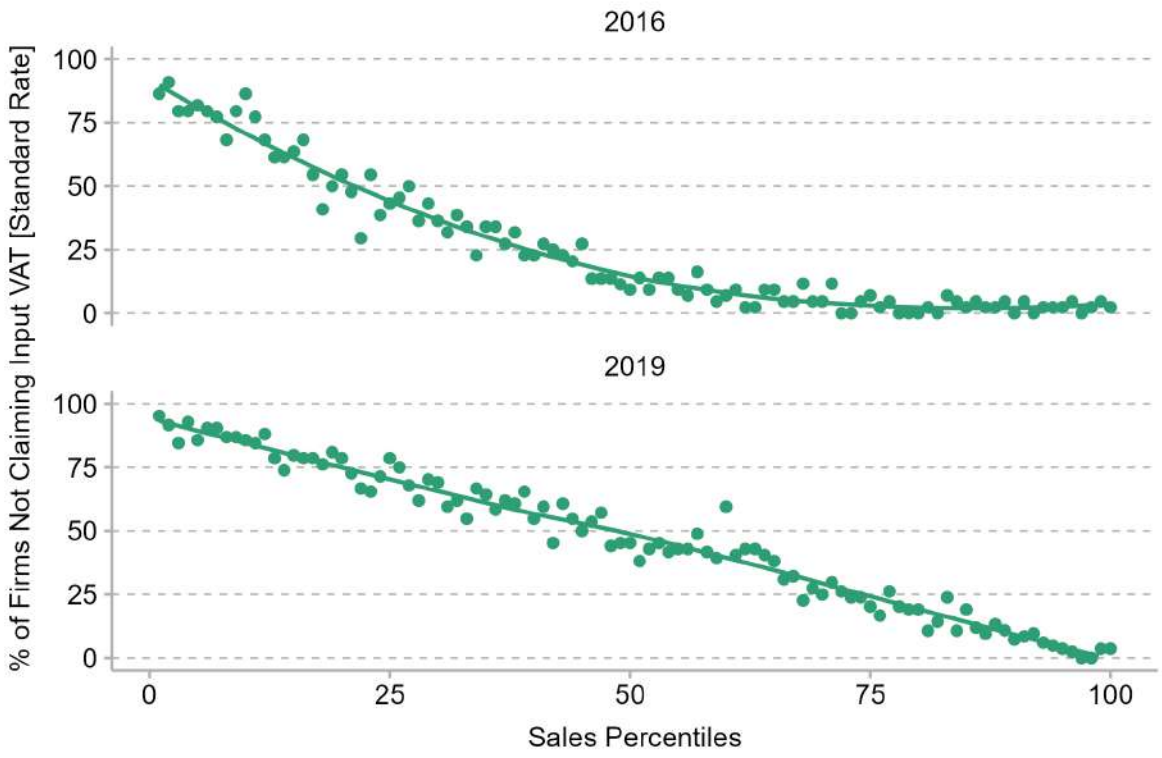
Source: Authors' calculation using data from trips™.

This evidence suggests that the 2018 NHIL/GETFL reform exacerbated a peculiar feature of the reporting behaviour of Ghanaian VAT businesses: namely, the prevalence of non-claiming of input VAT. As discussed, the ability of businesses to reclaim input VAT is a key design feature of the tax, and ensures that the tax is only paid on the business's value added. Claiming input VAT reduces businesses' tax liability, so businesses ought to have a strong incentive to do so.

However, this mechanism appears to have broken down in Ghana, where nearly 50% of VAT returns with positive reported sales claimed zero input VAT in 2020, up from 25% in 2016 (though this includes compositional change). Input VAT non-claiming is much more common among smaller businesses, as Figure 3.12 shows. In 2016, 50% of businesses at the 25th turnover percentile (smaller businesses) did not claim input VAT, compared to close to 0% at the 75th turnover percentile (larger businesses). By 2019, even larger businesses were not claiming input VAT. For example, 25% of businesses at the 75th turnover percentile in 2019 did not claim input VAT. This pattern may partly reflect the impact of the 2018 NHIL/GETFL reform, though it clearly was present before this as well. Non-claiming of input VAT has been documented in other African countries – for example, in Rwanda by Mascagni, Dom and Santoro (2021). They note that in Rwanda, many taxpayers express confusion about how to claim back input credits, and what purchases can be claimed back.

Alternatively, the non-claiming of input VAT could also be linked to businesses underreporting sales – businesses evading taxes by underreporting sales may want to also want to underreport their inputs.

### Figure 3.12. Percentage of businesses not claiming input VAT, by business size distribution




Note: This only includes standard rate VAT payers who report a positive annual turnover.

Source: Authors' calculation using data from trips™.

## VFRS

The motivation behind the VFRS was to simplify compliance processes for businesses, including the computation of tax liabilities (because retailers and wholesalers would only have to track and report sales, not input purchases), and in turn reduce costs for consumers, as well as reduce the prevalence of negative reported VAT liabilities (by disallowing the reclaim of input tax payments). Many businesses switched over to VFRS; these businesses made much lower average tax payments than those in the standard VAT scheme (Table 3.2). In 2019 and 2020, trips™ payments data capture more businesses paying VFRS than standard VAT. Payment of VFRS and standard VAT are not mutually exclusive, however: of those businesses that did pay VFRS from 2017 to 2020, 23% paid both the standard VAT and

VFRS in the same year. Indeed, these taxpayers often paid both standard VAT and VFRS in the same month.

### Table 3.2. Taxpayers and annual tax payments in trips™ data, by tax type

| | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| **Standard VAT** | | | | | |
| Taxpayers | 7,294 | 13,155 | 14,247 | 13,690 | 13,192 |
| Median payment | 2,851 | 2,444 | 3,220 | 3,877 | 3,751 |
| Mean payment | 403,747 | 254,854 | 264,008 | 258,214 | 303,621 |
| **VFRS** | | | | | |
| Taxpayers | – | 5,619 | 12,042 | 13,910 | 14,702 |
| Median payment | – | 700 | 1,260 | 1,551 | 1,566 |
| Mean payment | – | 27,267 | 41,626 | 47,671 | 56,983 |
| **NHIL/GETFL** | | | | | |
| Taxpayers | – | – | 784 | 11,893 | 12,638 |
| Median payment | – | – | 11,075 | 2,070 | 2,216 |
| Mean payment | – | – | 364,770 | 165,674 | 189,119 |

Note: All figures are annual payments in nominal GHS.

Source: Authors' calculation using data from trips™.

The VFRS scheme created a number of challenges for Ghana's VAT system. From an administrative perspective, the scheme added some complexity to the system, requiring different tax forms and requiring the GRA to commit resources to implementing and administering a new regime. As already mentioned, many businesses submit VFRS and standard VAT returns in the same month, or constantly switch between the VFRS and the standard VAT. This is not necessarily fraudulent. Businesses that have a mix of retail and non-retail activities are allowed to participate in both the VFRS and standard VAT at the same time. However, if the goal of the VFRS is to reduce compliance costs, the fact that businesses choose to file both the standard VAT and the VFRS at the same time or switch between the systems in different months means that it is unlikely to be achieving its goal of reducing administration and compliance costs for these businesses. It may also allow businesses to strategically use the two different systems to minimise their overall tax bills.

Moreover, while simplified tax filing and bookkeeping may indeed reduce compliance costs for eligible businesses, it also reduces the amount of information available to the GRA to use in enforcement activities.

Crucially, the fact that VFRS businesses cannot reclaim the tax paid on their inputs breaks the input credit chain that is core to the design of VAT. As already discussed extensively in the context of the levies, this taxation of inputs creates a number of incentives for VFRS businesses that wish to reduce their tax burden, including self-supply of inputs, purchasing from the informal sector, colluding to evade VAT with formal suppliers, and substitution away from taxable inputs. Such effects are anathema to the design principles of VAT.

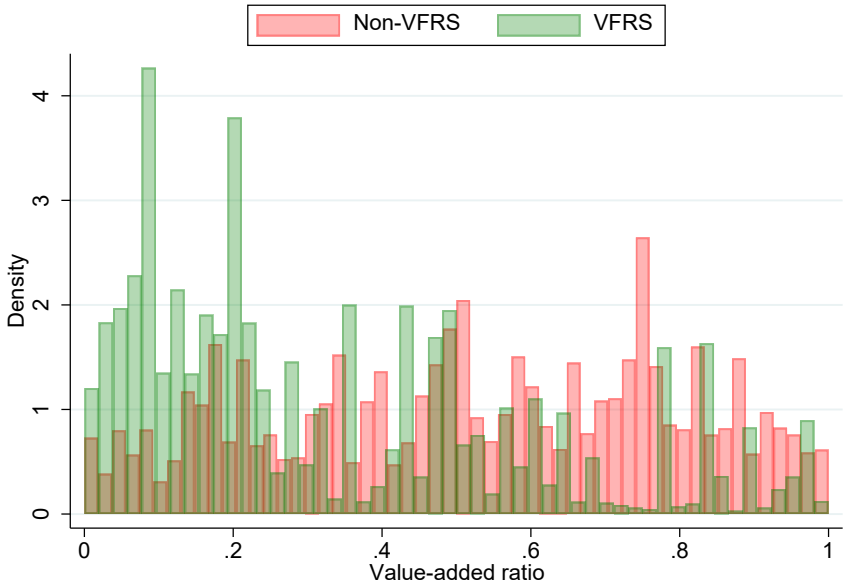
The initial VFRS rate of 3% was selected in 2007 so as to approximate the net tax rate (i.e., the amount of VAT paid measured as a percentage of sales, after accounting for the reclaim of VAT paid on inputs) paid by taxpayers in the standard VAT system when the gross tax rate was 15% at the time. In 2022, this will no longer be the case as the combined VAT and levies rate has increased to 19.25% (and, in addition, the levies are not reclaimable). Because of the possible general equilibrium effects of the VFRS scheme mentioned above, and the possibility for some level of input taxation accumulating through the production chain (depending on where VFRS businesses sit in such production chains), it is difficult to compare the tax burden of businesses before and after the introduction of the scheme. However, in Box A.6 we can provide an illustrative example of relative tax burdens for a VFRS business that sells to a final consumer and must buy inputs from standard-rated businesses. This highlights how the level of value added of a business affects how desirable the VFRS scheme is for them. From an individual business's perspective, the VFRS system is preferable when the share of value added in total output is high; the opposite is true for the standard VAT system.

A simple calculation suggests that retailers with value added above 17% would obtain a lower tax burden through the VFRS at the point of implementation in 2017, assuming all sales are made to buyers unable to reclaim input taxes. Different scenarios give different conclusions, however. For instance, for a business selling to other businesses on the standard VAT scheme, at the point of implementation VFRS would never have been preferable since B2B transactions incur no net VAT in the standard system, and VFRS leads to net taxes on inputs.

Once the current structure is considered, however, the levies change the arithmetic considerably: the fact that VFRS businesses do not have to charge NHIL and GETFL makes the scheme much more advantageous. In particular, they mean that if selling only to unregistered businesses or consumers, the VFRS scheme is advantageous from a tax perspective at *all positive levels of value added*. If selling to registered VAT businesses only, the VFRS scheme is preferable for value added above 62%, as opposed to never being preferable before the levies.

Based on business survey evidence, value added among VFRS-eligible businesses is typically above 17%, and may sometimes be above 62% as well (Figure 3.13), suggesting that the VFRS is likely to be preferable for many such businesses. Of course, this also implies lower revenues for the tax authority.

**Figure 3.13. Value-added ratio; VFRS eligible versus non-eligible businesses**




Note: Excludes observations with negative value-added (18% of sample).

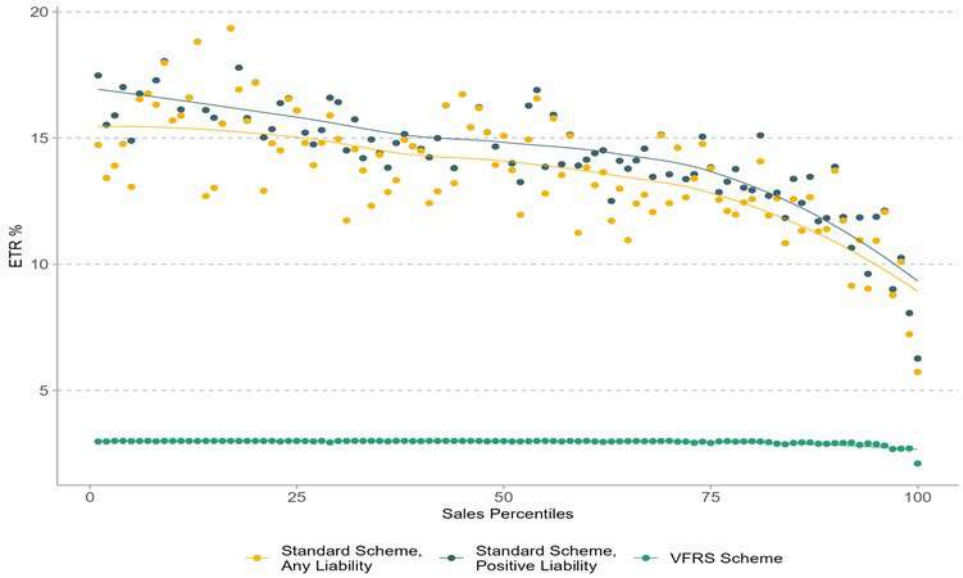
Source: IBES wave 2.

Using tax return data, we can evaluate how switching over to VFRS affected key margins of reported behaviour for individual businesses. Figure 3.14 shows effective tax rates by reported business size for businesses in the standard VAT regime and in VFRS, where the ETR is (output VAT – input VAT + levies) / taxable sales for standard rate businesses, and tax paid/taxable sales for VFRS businesses. Almost all VFRS businesses had an ETR of 3% in 2019 (close to the statutory tax rate of this tax). However, there is a wide variation in ETRs faced by firms in the standard scheme, with ETRs averaging 17% for the smallest businesses and 6% for the largest businesses. This confirms the intuition of the scenarios described above: businesses in the VFRS pay a much smaller proportion of their sales in taxes.[21] Note that the VFRS scheme is currently only available to small retailers and wholesalers, but the

[21] Strictly, the data shown here and the scenario analysis shown above are not like-for-like comparisons, since the tax return data does not account for trade partners (and thus net tax liability on transactions), and does not capture input taxes paid for VFRS businesses. However, the key takeaway is the same with both methods.

average ETR among retailers and wholesalers in the standard VAT is broadly similar for all businesses.

**Figure 3.14. Effective tax rates in different VAT regimes, by percentiles of sales, 2019**




Note: Tax liability is calculated as net VAT (output VAT – input VAT) + NHIL + GETFL for standard scheme payers, and as tax paid for those in the VFRS scheme. ETR is calculated as tax liability/sales. ETRs greater than 100% or less than –100% are winsorised. Percentiles are defined so that the largest businesses by sales are on the right. Only businesses with positive sales are included. Some businesses in the standard scheme may have ETRs greater than 18.1% (the combined sales tax at the time) due to differences in the reported base between NHIL/GETFL and VAT returns.

Source: Authors' calculation using data from trips™.

We postpone evaluation of the policy's revenue impact until Section 5, but the scenario and tax return analysis offered here highlight the complicated effects of the VFRS.

A restricted VFRS would remove the incentives for businesses to change their tax status or change their production and trading decisions in order to reduce tax burdens, while also making the system more transparent, more equitable, and less complex to administer and understand. In this respect, the reform announced in the 2022 Budget, which places a GHS 500,000 cap on annual sales of businesses in the VFRS scheme, is a positive step.

# Distributional analysis

To conclude our review of the features of policy design in Ghana's VAT, we now turn to the distributional effects of the tax. As described in Section 2, who bears the burden of taxation is

often an important consideration for policymakers, and in this respect the progressivity of taxation is usually of interest as a measure of vertical equity. A progressive tax system is generally agreed to be a desirable policy goal, with better-off individuals or households expected to contribute larger relative shares of their resources. As emphasised earlier, this does not mean that every individual tax must be progressive. The effect of the tax system as a whole is much more important than whether any individual policy tool is progressive, since different policies have relative strengths. Nonetheless, it is still useful to evaluate the distributional effects of specific policies in isolation, in order to provide a comprehensive picture of the winners and losers from implemented measures.

In order to estimate the distributional effect of VAT and the levies in Ghana, we utilise the GHATAX microsimulation model, a sophisticated tax and benefit microsimulation model developed by TaxDev researchers in collaboration with the Ministry of Finance (MoF). This model uses household survey data providing detailed consumption information at the household level and a mapping of the statutory tax and benefit system to estimate the tax burden faced by households given the goods and services they report buying. Using statistical weights provided in the underlying data allows for aggregation of results to the national level for different population subgroups. The GHATAX model also estimates the effect of unreclaimable indirect taxes (e.g., from VAT exemptions) on consumer prices by utilising input–output relationships embedded in Ghana's SAM.[22] The model makes a number of simplifying assumptions which are common in applied analysis, including that indirect taxes are incident on consumers, and that tax changes induce no behavioural responses. For a discussion of the implications of these features, see Warwick et al. (2022) which describes an early version of GHATAX.

Figure 3.15 presents estimates of the average tax burden from VAT, NHIL and GETFL across 10 equal population deciles, ranked from poorest to richest according to the (consumption-based) welfare measure produced by the Ghana Statistical Service. The bars show VAT and levy payments (separately) measured as a percentage of consumption (on the left-hand axis), while the line shows VAT and levy payments (together) measured in cash amounts per person (on the right-hand axis). Box 3.2 discusses why we think measuring VAT and levy payments as a proportion of consumption provide a more meaningful picture of the distributional impact of these taxes than measuring payments as a percentage of income.

[22] The modelling of turnover taxes such as the NHIL and GETFL, however, is simplistic, and does not fully account for the fact that these are levied at *every* stage of production, in principle. This produces a downward bias on the measured size of these tax burdens for households.

### Box 3.2. Measuring the distributional effects of indirect taxes

It is often claimed that VAT is regressive because in any given short period of time, households with the lowest reported incomes typically incur VAT on their spending that represents a higher fraction of their income than households with higher incomes. However, analysis of indirect taxes measured as a share of income provides a misleading picture of the distributional effects of indirect taxes such as VAT, in both the long run and the short run.

The most obvious reason for this is that households can save and borrow (and give and receive transfers to and from other households). They use such mechanisms to address volatility in both their incomes and their spending. When households have temporarily low incomes, they typically spend more than their income (supported by savings, borrowing or transfers from family and friends), while when their incomes are temporarily high, they typically spend less than their income.

It is these patterns that mean that when one ranks households according to their income, those with the lowest incomes face the highest burden of VAT measured as a share of income (because they spend more than their income) and those with the highest incomes the lowest burden (because they spend less than their income). Especially in developing countries, though, evidence suggests that rather than rank households according to their income, it is better to rank them according to their expenditure as this is a better reflection of their living standards (Abramovsky et al., 2011). But households with the lowest expenditure typically report incomes higher than their expenditure, and so VAT constitutes a relatively low share of their income, whereas those with the highest expenditure typically report incomes lower than their expenditure, and so VAT constitutes a higher share of their income. Thus, depending on whether households are ranked according to their income or expenditure, when measured as a percentage of income, a uniform VAT can look strongly regressive or strongly progressive (see Institute for Fiscal Studies et al., 2011). Measured instead as a fraction of expenditure, this uniform VAT would look distributionally neutral. This would match its lifetime distributional effects measured both as a percentage of expenditure and income (net of bequests received and bequests given), and so would better reflect the long-run distributional effects of VAT.

It also better reflects its short-run distributional effects as well – because ultimately what matters for people's welfare (in the short as well as the long term) is what they are able to consume, not their income. Consider, for example, a low-income household with income of GHS 1,000 per month, but expenditure of GHS 1,500. Suppose VAT was imposed at a uniform rate of 10%, costing GHS 150 per month; in the short term, they would need to reduce their consumption by approximately 10% as a result of this tax (assuming they were unable to further increase expenditure). It would not be feasible for any household to consistently spend more than their income, though, so without an increase in their income, eventually their expenditure would need to fall to GHS 1,000, meaning that a uniform VAT

would cost GHS 100, again necessitating a reduction in consumption of approximately 10%. In both the short and long term, therefore, the uniform VAT would reduce consumption by 10%. Measured as a percentage of income in the short term while expenditure exceeds income, one would instead estimate a 15% proportional impact (150/1000), which would overestimate the required reduction in consumption in both the short and long term.

Finally, it is worth noting that even in the absence of saving, borrowing and inter-household transfers, measurement error in income and expenditure in household surveys can give a misleading impression of the distributional effects of indirect taxes when expressed as a fraction of income. This is because households with the lowest reported incomes will, on average, have underestimated incomes, while those with the highest reported incomes will, on average, have overestimated incomes. If measurement errors for income and spending are uncorrelated, this will make payments under a uniform VAT decrease as a fraction of income as you move up the income distribution. Conversely, it will increase as a fraction of income as you move up the expenditure distribution.

Thus because of saving, borrowing and inter-household transfers and measurement error, analysis of the impact of indirect taxes such as VAT as a share of expenditure/consumption is preferable to analysis as a share of income.

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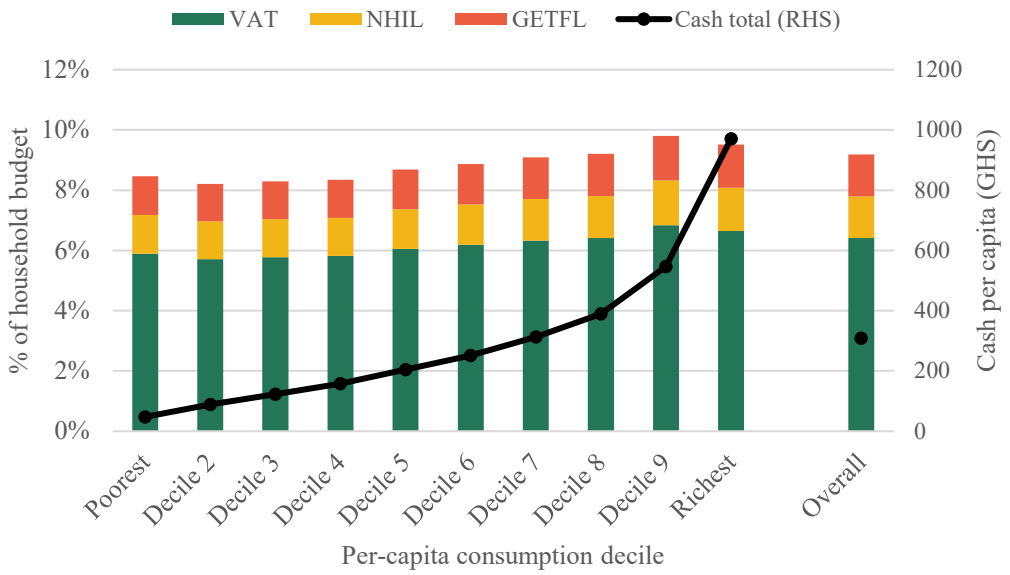
Figure 3.15 shows that the VAT and levies system in Ghana is mildly progressive: while they collectively amount to just over 8% of consumption for the poorest 10% of the population, this figure is just under 10% for the richest households. This amounts to very large differences in cash payments, with the difference being a factor of 20 between the richest 10% and poorest 10% of households. This mild progressivity likely reflects the scope of Ghana's exemptions which, as shown earlier, take up a larger proportion of the budgets of poorer households, on average. If all goods and services were subject to the same VAT rate, the effective VAT rate (measured as a share of expenditure) would be the same for all households.

There is also good reason to believe that the mild progressivity shown here is an understatement of the true progressivity of these taxes. The estimates in Figure 3.15 assume that all households are equally likely to actually pay VAT on their purchases. However, in contexts of widespread informality and non-compliance such as Ghana, international evidence suggests this is not true. Bachas, Gadenne and Jensen (2023) show that across a wide range of countries, poorer households are more likely to purchase informally and thus are less likely to pay VAT or other similar sales taxes in practice. Assuming this pattern also holds true in Ghana, VAT and the levies will be even more progressive than shown here in practice.

**Figure 3.15. Estimated VAT, NHIL and GETFL by consumption decile (2020)**




Note: Households ranked by consumption per equivalent household member.

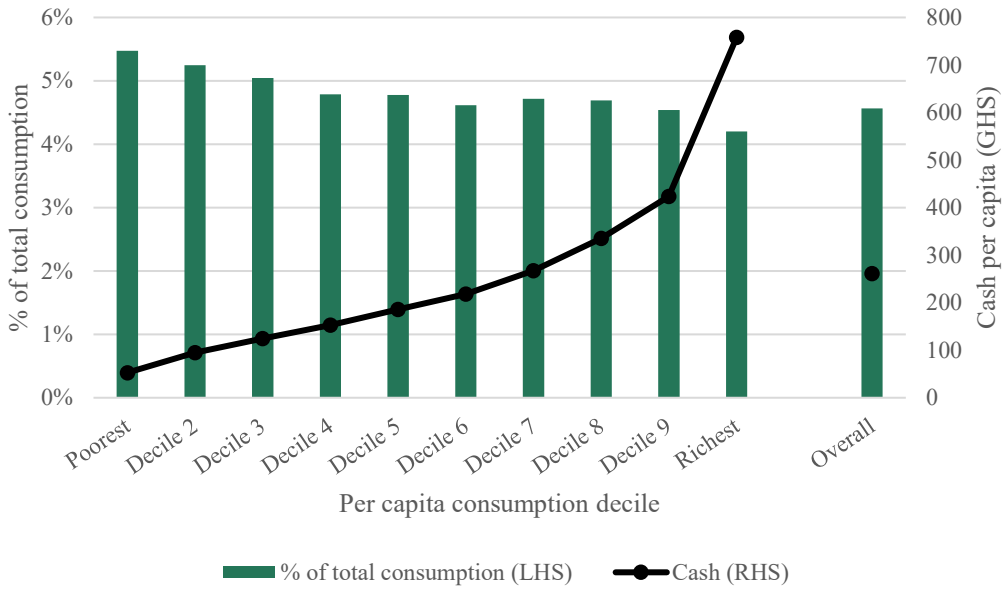
Source: Authors' calculations using GHATAX; underlying data is GLSS7 and 2015 SAM.

Next, we show the distributional effects of Ghana's current VAT exemption regime, building on the initial discussion earlier in this section. As mentioned, Ghana has a long list of VAT-exempt items, ranging from basic foodstuffs to financial and public services (see Box 3.1). To do this, we simulate a counterfactual scenario where all currently exempt goods and services are instead taxable under VAT, while maintaining their exemptions from the levies (NHIL, GETFL and CHL). This means that the analysis here focuses on the impact of exemptions from standard VAT (exclusive of the levies) on households at different levels of the consumption distribution, but the distributional effects of the levies would be similar (although not identical, given they are not reclaimable by businesses).

Figure 3.16 presents the estimated VAT expenditures associated with the exemptions across household consumption deciles. The current VAT exemption regime is mildly progressive in terms of the share of the tax burden in total household budgets; for example, while applying VAT on these currently exempt goods and services would increase taxes by the equivalent of 5.5% of the total consumption of the poorest 10% of households, the corresponding figure is around 4.2% for the richest 10% of households. Thus, measured as a share of consumption, poor households tend to benefit more from these exemptions than their relatively well-off counterparts. However, in cash terms, households in the top 10% of the consumption distribution are estimated to benefit 14 times more from the VAT exemptions: if these exemptions were removed, it is estimated that it would cost them GHS 760 (per capita) more

to purchase their current basket of goods and services, compared to GHS 53 more for those in the poorest 10% of the consumption distribution. This reflects the much higher levels of consumption overall by richer households in Ghana, as well as their greater propensity to buy the things they consume rather than produce them themselves.

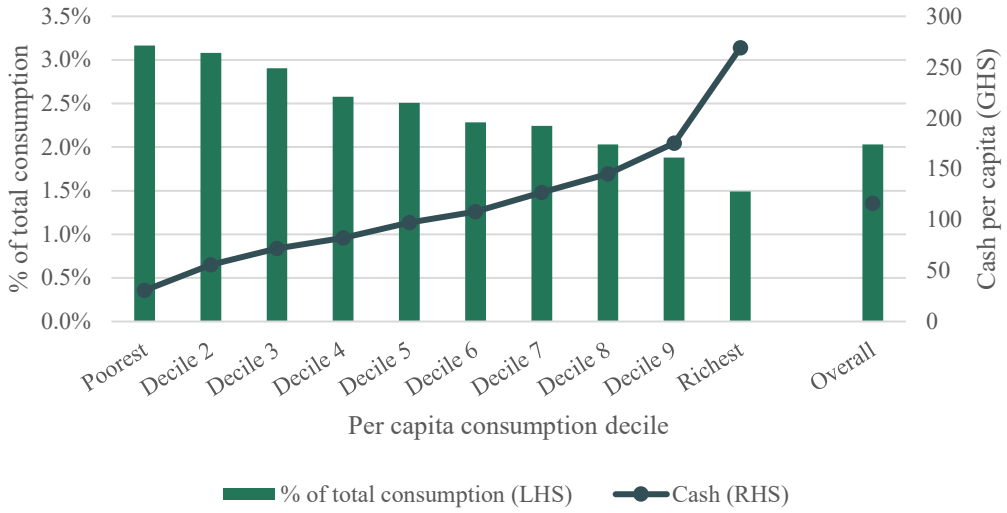
### Figure 3.16. Distributional effects of Ghana's VAT exemption regime (All exempt goods and services)




Note: Households ranked by consumption per equivalent household member
Source: Authors' calculations using GHATAX; underlying data is GLSS7 and 2015 SAM.

A disaggregated analysis of the distributional effects of Ghana's VAT exemption regime across different groups of products and services (i.e., fuel, foodstuffs and transportation) shows that different exemptions have different effects. The overall progressive pattern of Ghana's VAT exemption regime (when measured in proportion terms) is driven largely by foodstuffs. As shown in Figure 3.17, removal of these exemptions would cost the poorest 10% of households the equivalent of 3.2% of their consumption, compared to 1.5% for the richest 10%. In cash terms, however, exemptions on foodstuffs benefit the rich more than the poor; on average, the cash benefit of the exemptions is around 9 times higher for the 10% of households with the highest levels of overall consumption, than for the 10% with the lowest levels of overall consumption. Thus, exemptions for food, while progressive in a proportional sense, are regressive in cash terms.

## Figure 3.17. Distributional effects of VAT exemption on foodstuffs

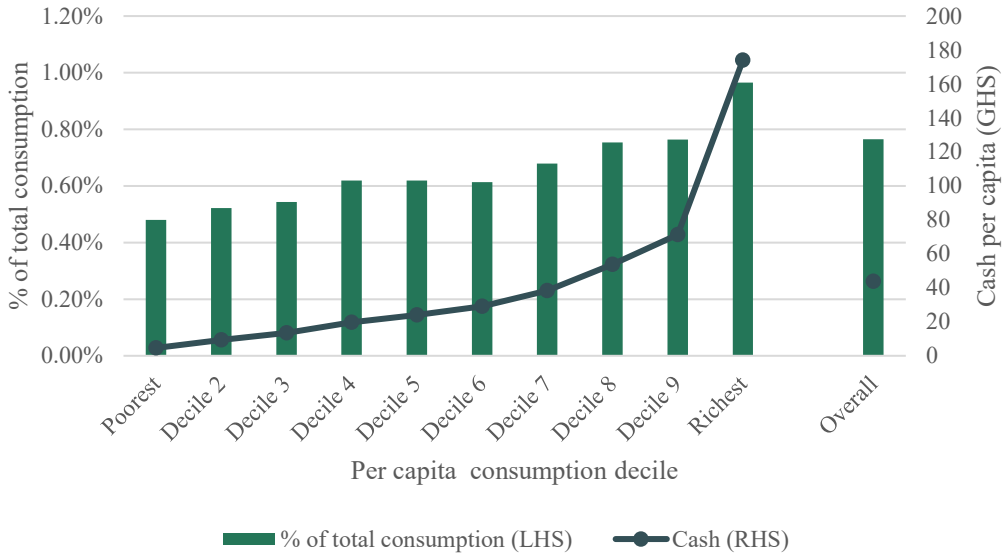



Note: Households ranked by consumption per equivalent household member; foodstuffs include local rice, sorghum and millet, maize, other cereals, cassava, livestock (cattle, goats and sheep), local breed poultry, fish, fruit and nuts, fruit and vegetables, other crops, among others.

Source: Authors' calculations using GHATAX; underlying data is GLSS7 and 2015 SAM.

Exemptions for other broad categories of goods and services are sometimes regressive not only in cash terms but also as a percentage of household consumption. This includes fuel and related products and transport and storage services, as shown in Figures 3.18 and 3.19, respectively. This does not mean that exemptions for all subcategories of goods and services within these broad categories are necessarily regressive in both proportional and cash terms, but if one tries to target exemptions too narrowly one risks distorting consumption and creating incentives for tax evasion.

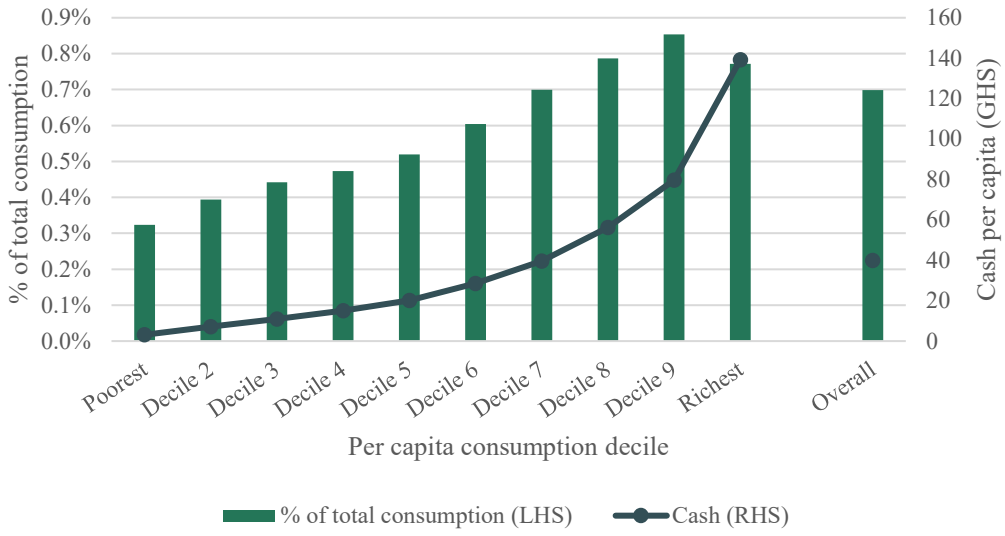
## Figure 3.18. Distributional effects of VAT exemption on fuel and related products




Note: Households ranked by consumption per equivalent household member; fuel and related products include kerosene, gas for household use, and other fuel and power.

Source: Authors' calculations using GHATAX; underlying data is GLSS7 and 2015 SAM.

## Figure 3.19. Distributional effects of VAT exemption on transport and storage services




Notes: Households ranked by consumption per equivalent household member; transportation and storage services include postal services, public transport and domestic airlines.

Source: Authors' calculations using GHATAX; underlying data is GLSS7 and 2015 SAM.

# 4. Review of VAT administration

In this section, we review and evaluate key features of tax administration pertaining to Ghana's VAT system in practice, considering the same issues as presented in Section 2 when discussing the *principles* of VAT administration. The full breadth of the VAT administration process is multifaceted and complex, and a comprehensive evaluation requires investing significant time and resources observing the day-to-day processes of tax administration. Such an exercise is beyond the scope of this report. Instead, our approach in this section is to present suggestive evidence on the strengths and weaknesses of Ghana's VAT administration, drawing on the principles and research discussed in Section 2, a desk-based review of the rules and guidelines that shape administrative processes, existing literature, and analysis of various datasets provided by the GRA.

In addition, we also draw heavily on qualitative data obtained through interviews and workshops with GRA staff. This qualitative evidence is primarily drawn from a two-day workshop attended by 12 GRA staff and 8 MoF staff in Accra, Ghana, in March 2022. The various viewpoints expressed during that workshop were compiled and subjected to a post-workshop validation process; this information is used throughout this section.

## Organisational background

Since 1998, the system for administering VAT in Ghana has gone through some significant reforms, including changes to the organisational structure and technological resources for collecting VAT. Prior to 2009, VAT was administered solely by the VAT Service. In 2009, the GRA was established. This involved the integration of the three independent semi-autonomous revenue agencies[23] and the Revenue Agencies Governing Board, and led to the dissolution of the VAT Service. Under the new system, domestic VAT collections are now administered by the Domestic Tax Revenue Division of the GRA, and the Customs Division is responsible for collecting VAT at all entry points to Ghana.

[23] These are the Customs, Excise and Preventive Service, the VAT Service and the Internal Revenue Service.

Prior to 2020, taxpayers were segmented into one Large and various Medium and Small Taxpayer Offices (LTO, MTOs and STOs, respectively) according to their estimated annual turnover. The largest taxpayers (with turnover of GHS 5 million or more), and taxpayers in industries such as upstream and midstream petroleum, mining, banking and insurance, were all covered by the LTO. In 2020, this set of arrangements was changed. While the LTO remained in place, the MTOs and STOs were consolidated into Taxpayer Service Centres (TSCs) and 10 Area Offices across Ghana. The TSCs report to and are managed by the Area Offices. Because some of the data used in this report are from the period before 2020, analysis is disaggregated according to the institutional arrangements that were in place at the relevant time.

## Information technology and the availability, quality and use of data

At implementation in 1998, the system used by the then VAT Service to administer VAT was the Value-Added Tax Integrated Processing System (VIPS). In 2003, the Large Taxpayer Integrated Processing Systems was introduced to aid the collection of domestic taxes (including VAT) by the Large Taxpayer Unit; this was used alongside the VIPS. These systems were, however, gradually replaced by Total Revenue Integrated Processing System (trips™), the roll-out of which commenced in 2011. The trips™ system was introduced as an integrated domestic tax administration system to integrate revenue collection across tax types. trips™ had coverage of around 20% of VAT tax returns in 2016, increasing over time to 57% by 2020. Separately, the Ghana Customs Management System (GCMS) system and subsequently the Integrated Customs Management System (which replaced the GCMS system in 2020) comprehensively covered import VAT declarations.

A common theme throughout the subsections that follow is that the availability, quality and use of digitised data appears to have been a relative weak spot in Ghana's VAT administration – at least historically. A brief, non-exhaustive summary of some of the key data challenges is given below:

- The reliability and coverage of the VAT taxpayer registry is unclear.
- VAT returns have changed on various occasions, alongside multiple significant reforms to the VAT system, creating additional complication for data storage, processing and analysis.
- The use of paper returns alongside both new and legacy IT systems has meant that historically data from only a proportion of returns have been available in digital

form. This has meant that digital data were not representative overall, nor necessarily complete for a given taxpayer.

- The lack of an integrated information technology system and the presence of different manual and digital datasets from different sources can result in inconsistencies across datasets and siloed processes. Matching across tax types or with third-party data has traditionally been limited and has usually only been conducted for specific audit investigations, rather than automatically.
- Up until early 2022, there was no digitised invoicing information or any other information on B2B trade.

Taken together, these factors appear to have constrained monitoring and reporting processes, risk management, enforcement activities and policy analysis, and likely impede best practice in VAT administration in Ghana.

However, there have been a number of important IT developments in recent years which have the potential to impact future VAT administration in Ghana. These are briefly introduced in chronological order below. It is, however, crucial to ensure that there are sufficient investments in human resources to support and exploit the wealth of data these new systems have the potential to create.

- *GITMIS* (2021). The Ghana Integrated Tax Management and Information System (GITMIS) has replaced trips™ and is now being used for processing and storing registration data and tax returns, covering all domestic taxes.[24] The GITMIS will support operational and enforcement activities, and integrates compliance and debt management and audit modules. The GITMIS is being used as a temporary system until a new system can be introduced.
- *E-payments* (2021). A transition to e-payments was outlined in Ghana Revenue Authority's 3rd Strategic Plan (GRA, 2019). No cash is now received by TSCs, and the cashiering function has been disabled. E-payments are linked to the GITMIS.
- *E-filing* (2022). The introduction of e-filing was also part of the 3rd Strategic Plan (GRA, 2019). Roll-out started in 2022 with a focus on selected taxpayers.[25] Taxpayers who do not have access to e-filing technology can obtain support at their TSC.

[24] More precisely, the new system is GITMIS 3, a new incarnation of a system that has been used for tax administration in Ghana in the past.

[25] Taxpayers that are required to file their returns online through the GRA's e-filing portal include taxpayers registered with the LTO, taxpayers whose annual turnover is above GHS 5 million and excise taxpayers.

- *E-invoicing* (2022). The roll-out of e-invoicing software began in 2022.[26] As discussed in Section 2, this potentially has a strong potential to improve information trails and compliance. Key questions for the roll-out include compliance and administration costs and the extent and ease of data utilisation. Robust evaluation would help to inform the wider roll-out going forward.

In spite of the initiatives above, the last-mile problem remains a key area of risk where information gaps are likely to be pervasive. It is possible that e-invoicing will provide a partial solution here, as processed sales will automatically populate tax returns, and thus non-compliance will require more active evasion involving collusion between businesses and consumers. However, given the evidence discussed in Section 2, further strategies may also be worth exploring. Consumer lotteries in particular could be an option, given that Ghana has a strong tradition of lottery-playing.

# Voluntary compliance

## Registration

VAT registration is the first step for a potential taxpayer entering the tax system, and thus the ease of registration and the effectiveness of active registration efforts can be important determinants of an effective tax base. Moreover, tax registration is a crucial first interaction between the taxpayer and tax authority where information can be gathered and future behaviours influenced. In particular, the credibility of the taxpayer register requires that the tax administration system ensures that all eligible taxpayers are duly registered and all those who for one reason or the other are rendered ineligible or inactive are duly taken out of the tax register.

Section 3 described the conditions under which potential taxpayers are required to register for VAT: broadly, when their taxable sales exceed the registration threshold. Businesses may also register voluntarily at the discretion of the Commissioner-General, although as shown in Section 3 such requests seem to generally be granted (given the large number of registered businesses below the threshold).[27] Businesses registering for standard VAT are also registered for the NHIL, GETFL and CHL; however, businesses registering for VFRS are

[26] This is being done in phases; in phase 1, the system was rolled out to 50 large taxpayers commencing on 1 October 2022, while phase 2 involves a gradual roll-out of the system to medium taxpayers in 2023 and an expansion to all other VAT-registered businesses by 2024.

[27] Act 546 stipulated that the VAT registration threshold applied to only retailers of goods. This meant that historically all non-retailer-type businesses had to register for VAT regardless of turnover size. This was changed in Act 870 in 2013, which applied the VAT registration to threshold to nearly all sectors.

also registered only for the CHL since the VFRS is a simplified tax scheme for selected small taxpayers, mainly in the retail and wholesale sectors, and takes the place of the NHIL and GETFL, as well as VAT. In order to register for VAT, taxpayers must have a permanent place of business, and they must submit a registration form and business registration documents to their nearest TSC.[28] Upon successful registration, they are issued a VAT certificate (which includes the taxpayer's unique TIN) which must be displayed at the business once registered.[29] Discussions with personnel from the GRA suggest that office managers are usually assigned targets for taxpayer registration according to the population density of the geographical area that they are responsible for.[30]

Until recently, the GRA had the trips™ information processing system in place in the majority of its offices, and the design of its registration database and taxpayer information requirements was deemed to be satisfactory by external assessors. However, the roll-out of this system was slow: it was developed in 2012 and as of 2017 had been implemented in 25 out of 67 GRA offices – although by the end of 2018 it had been implemented in almost all offices. The trips™ system had an online registration interface, but this was not fully operational when the system was replaced in 2021. The delayed and limited roll-out of the primary registration software across all GRA tax offices led to some inconsistencies in the availability of taxpayer registration information, especially for offices where the trips™ system was not fully operational.

While information on the number of applications for VAT registration, or the length of time required for successful registration was not available for this report, the GRA acknowledges that they face a number of important challenges in the registration process. One is the lack of a comprehensive address system in Ghana, which can be a barrier to locating, registering and deregistering taxpayers. The GhanaPostGPS project – which provides unique digital addresses – offers a potential technological solution. Additionally, the GRA highlights the interactions between the tax registration and business registration processes (the latter managed by the Registrar General's Department (RGD)), and the presence of a backlog of RGD-registered businesses which are yet to be assigned to tax offices by the GRA. GRA staff note that the practice of back-calculating tax arrears (mainly in relation to corporate income tax payments) for new taxpayers (sometimes using RGD registration as a proxy for

[28] Prior to 2020 this was their nearest STO or MTO. Depending on the time period being discussed, this section will switch between discussing TSCs and small and medium tax offices.

[29] Taxpayers can register for their unique TIN at various offices including the Registrar General's Department (RGD), the National Identification Authority and the GRA. However, for purposes of identification of taxpayers and promoting tax compliance, the Commissioner-General shall maintain a system of TINs (see Revenue Administration Act, 2016 (Act 915), Section 10).

[30] Information on these targets – and performance against them – was not available.

the date of commencement of business activity) may also slow down the registration process and create disincentives for businesses.

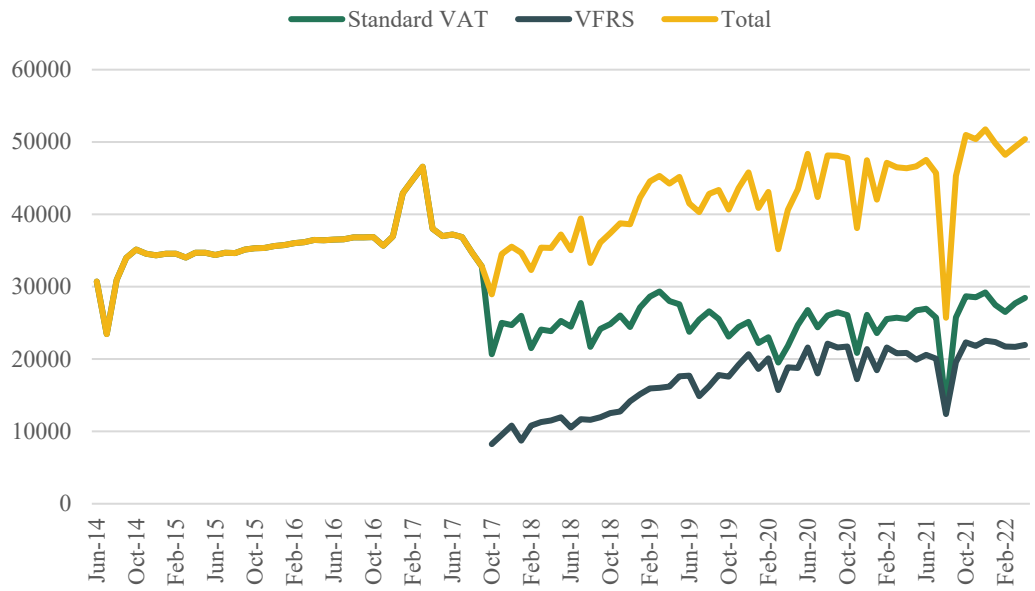
Deregistration processes – which are also important in terms of ensuring the integrity of the taxpayer register – are generally perceived by the GRA as performing relatively well. The GRA has processes for dealing with different forms of deregistration when these are initiated by the taxpayer. For instance, in the case of voluntary deregistration, taxpayers must pay any outstanding liability and will be subject to an exit audit. However, the GRA acknowledge the challenge of 'disappearing' taxpayers, which has implications for how thorough deregistration might be in practice. In addition, the targets for taxpayer numbers set for GRA office managers may disincentivise efforts to facilitate genuine deregistration. Businesses which are no longer active but are not deregistered may become non- or nil-filers.

Data from the GRA on the overall stock of registered VAT taxpayers suggests that, as of the end of 2021, there were over 50,000 VAT-registered businesses in total. Of these, nearly 56% were on the standard VAT regime, with 44% on the VFRS. However, this figure is likely to be an upper bound because with the data provided, it is not clear that all taxpayers in either scheme are distinct.[31] Indeed, as discussed previously, analysis of tax returns from trips™ shows that filing for both VFRS and the standard scheme in tandem does occur.[32] Given this caveat, registered taxpayer figures are likely to be most reliable prior to the introduction of the VFRS, or when focusing only within each tax scheme.

[31] It would be possible to ascertain this using taxpayer-level data (as taxpayers registered for both could be directly identified), but the data provided for this analysis were aggregated at the tax scheme and tax office level.

[32] This phenomenon is less of a concern in recent times due to the VAT Amendment Act, 2021 (Act 1072) which limits the application of the flat rate to retailers with annual turnover not exceeding GHS 500,000.

## Figure 4.1. Number of registered VAT taxpayers in Ghana




Note: Standard VAT and VFRS shown here as distinct groups. In practice, some taxpayers may be registered for both in tandem, such that the total shown here is an overestimate. The VFRS was introduced in October 2017.

Source: Ghana Revenue Authority.

Overall, Ghana has seen little growth in the number of taxpayers in its standard VAT regime since 2014 (Figure 4.1). From late 2014 to mid-2017, this number only increased from around 35,000 to 37,000, aside an unexplained peak in 2017Q1. There is a discrete reduction in the number of standard taxpayers on the implementation of the VFRS. From late 2017 until recently the growth in standard VAT businesses has been very modest, with the total number generally deviating between 20,000 and 30,000 each month with no clear trend. Comparing 2017 to 2020, a majority of tax offices in Ghana saw an increase in the number of registered standard VAT businesses, although some tax offices experienced large drops, as shown in Figure 4.2.[33] These decreases could potentially be attributed to the transfer of taxpayers across offices due to the periodic tax office reorganisation exercises conducted by the GRA.

Growth in the total number of VAT businesses reported by GRA has instead come from the VFRS, which grew particularly rapidly in 2018 and 2019, with the total figure increasing

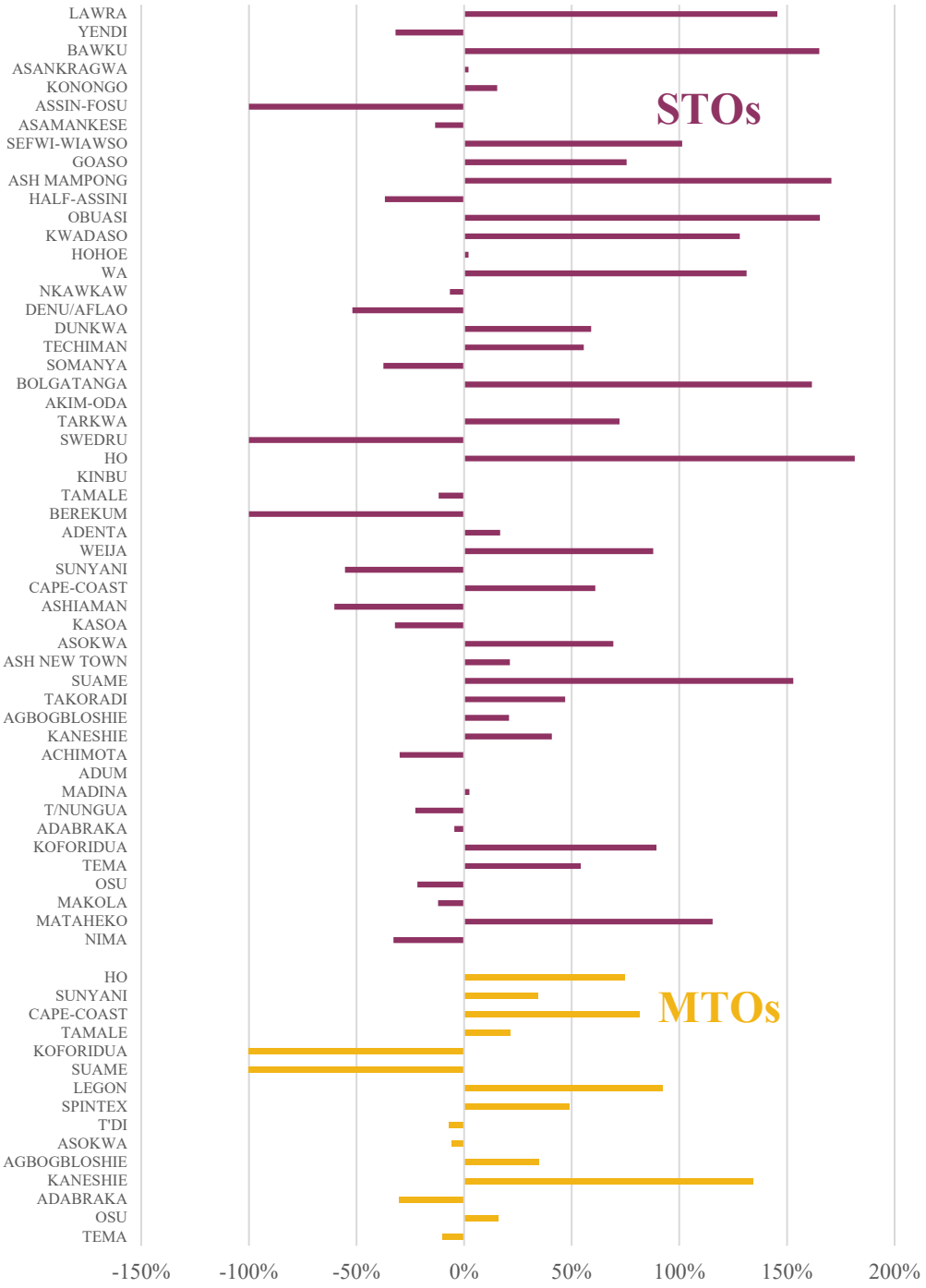
[33] The data provided for this report at the tax office level cover only standard VAT businesses and thus this includes the effect of the introduction of the VFRS.

substantially (as shown in Figure 4.1). However, we reiterate the caveat that not all VFRS businesses were new or distinct from standard businesses.

It is notable that the monthly data provided on 'registered taxpayers' is volatile, and subject to unexplained peaks and troughs. Naturally, this raises questions about the reliability of the taxpayer list. The integrity of the taxpayer register has traditionally been a problem, with the lack of a centralised register leading to fragmented systems, and separate registration applications across tax types. Ensuring the integrity of the taxpayer register must be an essential priority for the GRA.

The GRA and MoF agree that there are large numbers of businesses that should be registered for VAT but are not. It is difficult to know how many businesses *should* be registered for VAT. However, the indicative analysis presented in Section 3 using the IBES dataset suggested that in 2013 there were potentially 79,000 businesses with sales above the then registration threshold in sectors primarily selling VATable products. That analysis required broad-brush assumptions and thus is subject to uncertainty, but it does suggest a large unregistered taxpayer population, given that there were approximately 30,000 registered VAT taxpayers at that time.

## Figure 4.2. Percentage change in standard VAT taxpayers by tax office, December 2017 to December 2020




Note: Lawra, Yendi, …, Nima are STOs; the rest are MTOs. Within STOs and MTOs, offices are placed in ascending order by the number of standard VAT taxpayers in December 2019.

Source: Ghana Revenue Authority.

Moreover, while this is suggestive of a large number of businesses operating above the registration threshold that are not registered, close to 75% of businesses (in the trips™ data) report taxable sales below the registration threshold. Thus, the 'registration gap' may be even larger than that indicated by comparing sufficiently large businesses in IBES to the total number of VAT-registered businesses.

Internationally, the number of registered VAT businesses in Ghana is comparable to many other African countries on a per capita basis, based on data from the African Tax Administration Forum (ATAF) Databank (Figure 4.3). There is wide variation, however: Ghana's figure is considerably higher than those of a number of countries such as Angola, Cameroon and Sierra Leone, but much lower than those of Kenya, Mozambique, and wealthier nations such as South Africa and Botswana.

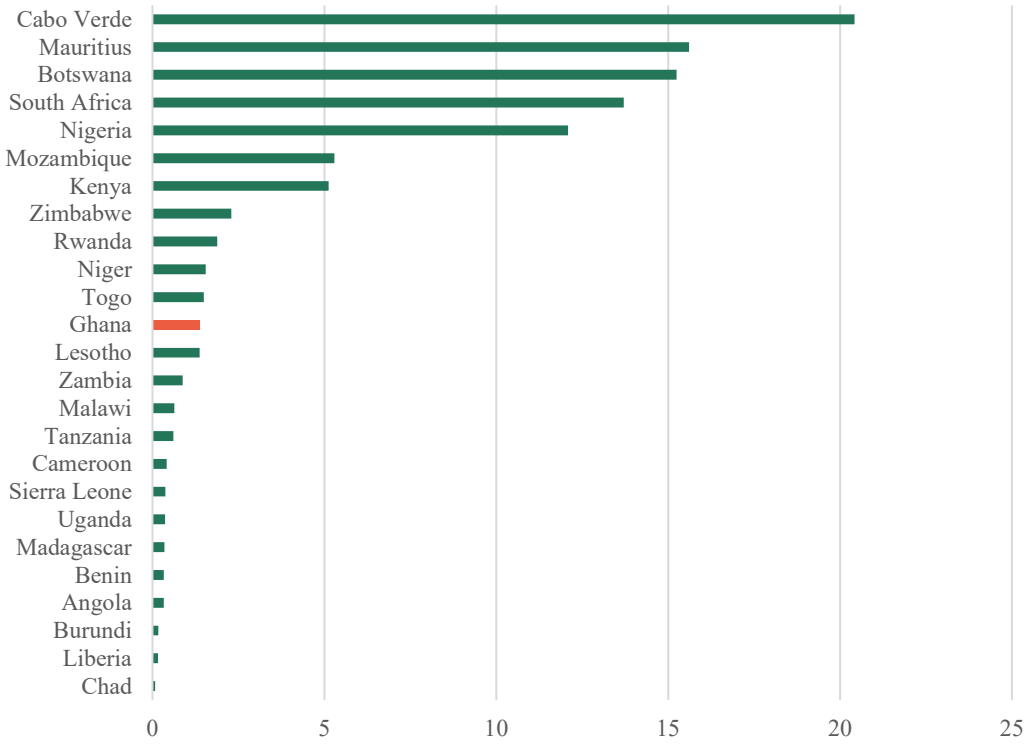
Increasing taxpayer registration is a significant challenge. The GRA indicate that efforts to increase taxpayer registration are usually organised at the TSC or tax office level, including through the use of local knowledge and sometimes mystery shoppers. Mass registration exercises have been implemented in the past, though no information on their effectiveness is available. Mop-up campaigns are also organised by the various tax offices.[34]

The GRA also organises an annual taxpayer education campaign and has been expanding the provision of information and education for taxpayers through its website and online, in order to ease compliance burdens. This includes greater use of both social media (via GRA TV) and traditional media (i.e., TV and radio).

In addition to the challenges and disincentives of the registration process discussed earlier, the GRA have indicated a number of challenges in identifying unregistered taxpayers. One is the challenge of accessing third-party data and constraints with the quality of such data even in cases where they become available. Resource challenges also limit the GRA's ability to undertake some of the activities outlined above – especially in offices covering large geographical or densely populated areas.

[34] A mop-up campaign involves contacting potential taxpayers directly – by telephone or in-person visits – with the aim of ensuring that those that are required to register do so.

### Figure 4.3. VAT taxpayers per 1,000 persons in African countries, 2019




Note: The number of VAT taxpayers reported for Ghana in the ATAF Databank is 42,160 for 2019, which is close to the monthly figures for 2019 shown in Figure 4.1.

Source: ATAF Databank.

## Invoicing and filing

When making sales, registered taxpayers are required to issue 'VAT invoices' that show the calculation of the tax due from VAT and the levies (NHIL, GETFL and CHL). These invoices can take the form of the taxpayer's own computer-generated invoices,[35] or the Commissioner-General's invoice. Historically, VAT invoice information has not been collected by the GRA on a regular basis; instead, information from VAT invoices has been used by taxpayers to populate their returns in advance of filing. Only in the case of follow-up enforcement activities has the GRA utilised invoice information. The ongoing roll-out of the 'e-VAT' scheme will for the first time provide the GRA with (live) VAT invoice data. This brings significant potential for better information and enforcement, but will require concurrent investments in human resources, and it will also be necessary to monitor the

[35] These invoices, however, must be authorised by the Commissioner-General upon application.

administration and compliance costs associated with the implementation of this new technology.

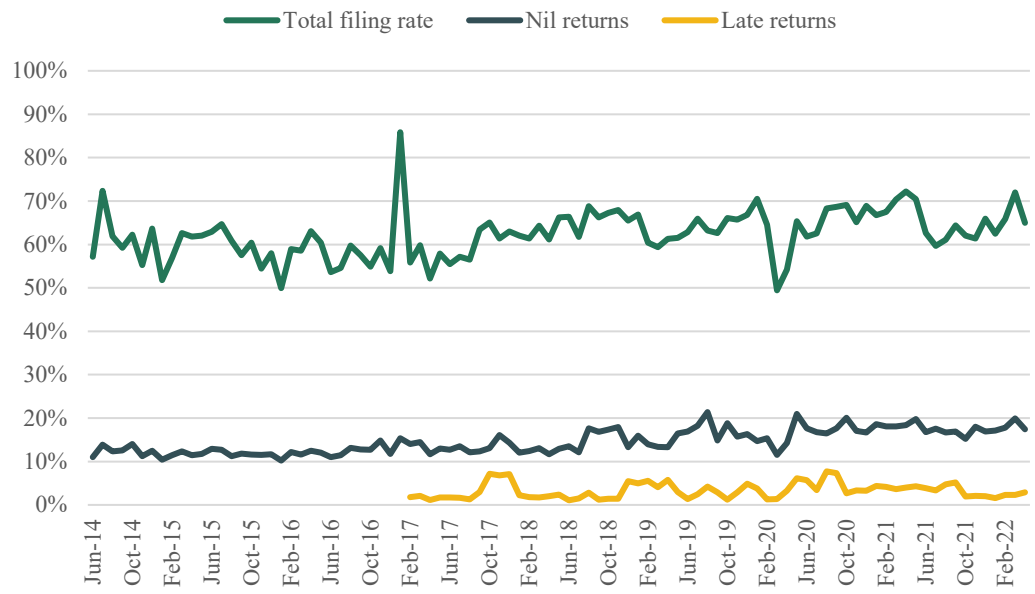
Taxpayers must file monthly tax returns by the last working day of each month. There are separate tax returns for standard VAT and VFRS, and a combined levy return covering the NHIL, GETFL and CHL. Thus, all VAT taxpayers are required to file a standard VAT or VFRS return and a levy return. In some cases, VAT taxpayers may be required to file a standard VAT return, VFRS return and the levy return if filing under both the VFRS and standard scheme, as is sometimes observed in administrative data. The information required in these returns covers the key information such returns should cover, relating to sales, inputs, withholding credits, and so on. Moreover, detailed notes are provided both in the tax return and on the GRA's website to guide taxpayers through the process. The main element of information that is absent from these tax returns but found in some other VAT systems is any information about trading partners; however, prior to the widespread digitisation of returns, the value of such information relative to the implied compliance costs is unclear.

The information required for these tax returns, and the practice of monthly filing, are relatively standard. However, the need to file multiple tax returns is not, and adds to the compliance (and administrative) burden of the system. PwC and the World Bank (2020) estimated that in 2018, the time required to comply with consumption taxes in Ghana was 98 hours per year. Though substantial, this figure is not disproportionate relative to world and African averages of 90 hours and 109 hours, respectively.

Up until 2021, some filing continued to be on paper returns, with an (increasing) proportion of these entered into trips™. Paper returns create challenges of data quality and security. They also limit the availability of tax data for both enforcement and policy analysis. For instance, while GRA filing statistics suggest there were more than 231,000 total VAT returns filed in 2016, trips™ contains just over 46,000 – a coverage of approximately 20%. By 2020, coverage was above 57%. Moreover, anecdotal evidence suggests that changes in both tax policy and in the tax returns themselves have historically resulted in different versions of VAT returns being used across different taxpayers, offices, and over time, although the GRA is confident that this no longer occurs. It also suggested that in the LTO in particular, filing processes were well managed and generally adhered to. The GRA set an April 2022 deadline for all taxpayers to begin filing their tax returns electronically via its e-filing system, with taxpayers without their own e-filing infrastructure able to file at their TSC. This is a positive step towards reducing compliance burdens and improving data quality. One potential risk could be an additional administrative burden for TSC staff, however, if they are required to assist large numbers of taxpayers with e-filing.

For this report, authors accessed data on taxpayers' filing at the MTOs and STOs, but not the LTO. Figures 4.4 and 4.5 show a total filing rate of 50–70% over time, with some increase since 2017, perhaps owing to the VFRS (Figure 4.4). Nil returns have increased over time, and account for almost a third of returns in 2021. Late filing is also quite common. It is important to note, however, that information from the taxpayer register about those who are required to file underpins all of the analysis below, and as already outlined, there may be gaps and inconsistencies in these data.

**Figure 4.4. Aggregate VAT filing behaviour for taxpayers filing at MTOs and STOs.**



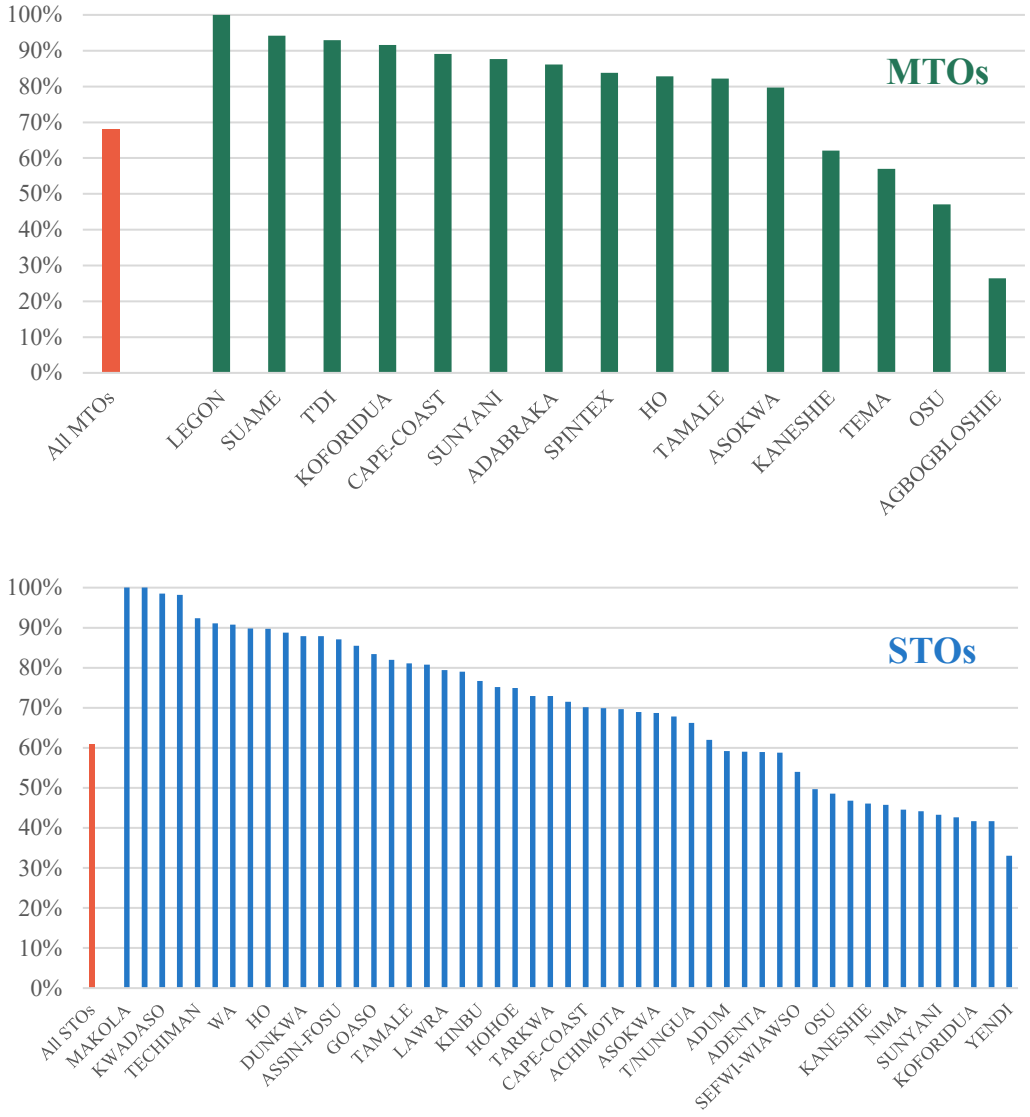

Note: Total filing rate is the sum of nil returns, payment returns, credit/refund returns and non-payment returns, as a share of registered domestic VAT taxpayers, including both standard VAT and VFRS. Late filing information only available from 2017.

Source: Ghana Revenue Authority.

This aggregate pattern hides the fact that there are different filing patterns across offices. Taking 2019 as an example, the aggregate filing rate in MTOs was 68%; in STOs it was 61%. At the individual office level, reported filing rates varied from below 30% to 100% (Figure 4.5). There are a few instances where reported filed returns exceed the total number of registered taxpayers; in those instances we capped the filing rate at 100%. An excess of reported filed returns over the number of registered taxpayers in a given tax office may be due to mistakes in the data-generation process or individual registered taxpayers filing more than one VAT return. This could affect the results presented in this report and hence the evidence here must be interpreted with caution. The significant level of variation in filing rates across tax offices suggests a need to consider the compliance processes and metrics

being monitored at a more disaggregated level. The GRA does have processes intended to monitor, contact and follow up with non-filers and nil-filers as part of its compliance programme but indicates that these are administered locally, and could potentially be strengthened by – for example – reviewing and updating operational directives so that they are aligned with recent changes in processes, and embedded in operational manuals and standard operating procedures, and providing further training for junior staff.

### Figure 4.5. Filing rates by tax office, 2019




Note: Total filing rate is the sum of nil returns, payment returns, credit/refund returns and non-payment returns, as a share of registered domestic VAT taxpayers, including both standard VAT and VFRS. Filing rate is capped at 100% in the few cases where reported tax returns filed exceed registered taxpayers. Such cases might reflect mistakes in the data-generation process, or perhaps individual registered taxpayers filing more than one VAT return (e.g., a standard return and a VFRS return).

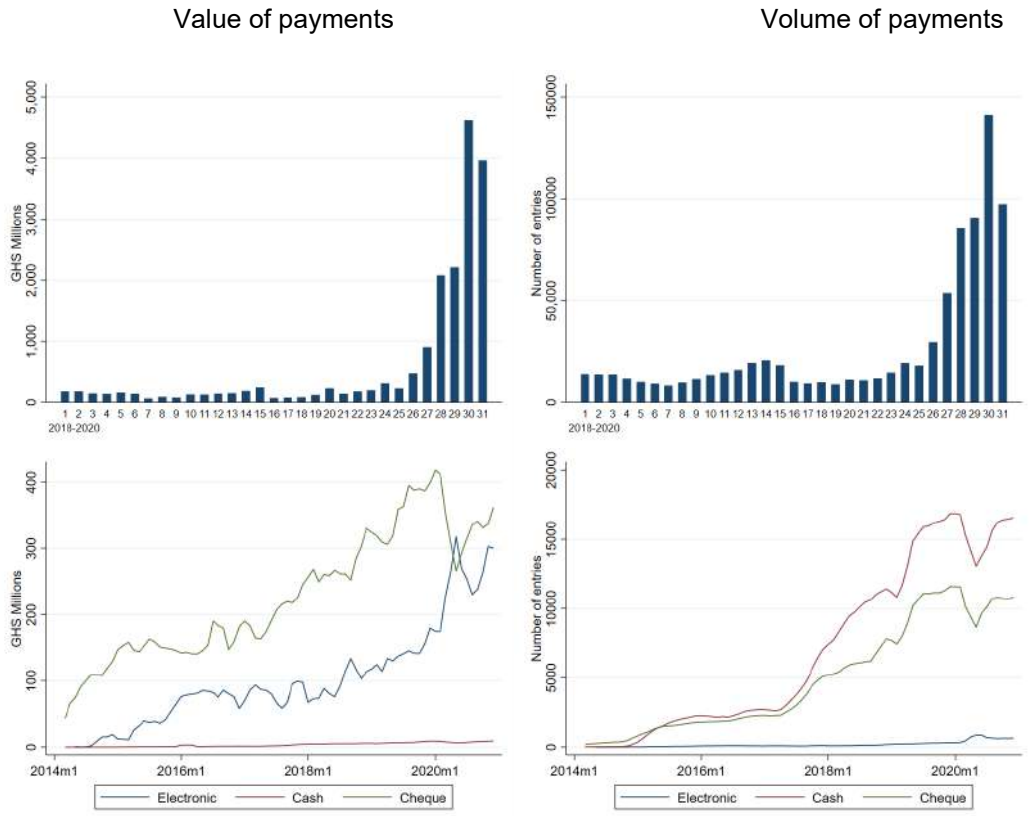
Source: Ghana Revenue Authority.

## Payment

In principle, the payment of VAT liabilities is due at the same time as the submission of the tax return, except in cases where the taxpayer is in credit. Import VAT is usually paid at the point of importation and is accounted for by the Customs Division. In general, the GRA indicated that existing payment processes are strong and that the transition to electronic

payments since July 2021 had been a significant success. There have clearly been substantial changes in payment processes and mechanisms in recent years, although collections appear to be a particular strength in Ghana. Tax payments are stored in a separate information system to tax returns, and the TIN provides a link so that payments are deducted from outstanding debt. The GRA note issues that can arise when taxpayers or payment providers specify the wrong tax type during the payment process, but these were considered minor overall.

**Figure 4.6. Characteristics of payments recorded in trips™ data: day of month (top) and method of payment (bottom)**




Note: Graphs include payments in trips™ data for standard VAT, VFRS and NHIL/GETFL. The top two graphs show the day of the month the payment was lodged, by total payment values (left) and volumes (right), from 2018 to 2020. The bottom graphs show the means of payment by value (left) and volume (right), presented as 3-month rolling averages. Electronic payments include bank transfers, debit cards, bank drafts and e-payment. One outlier observation has been excluded.

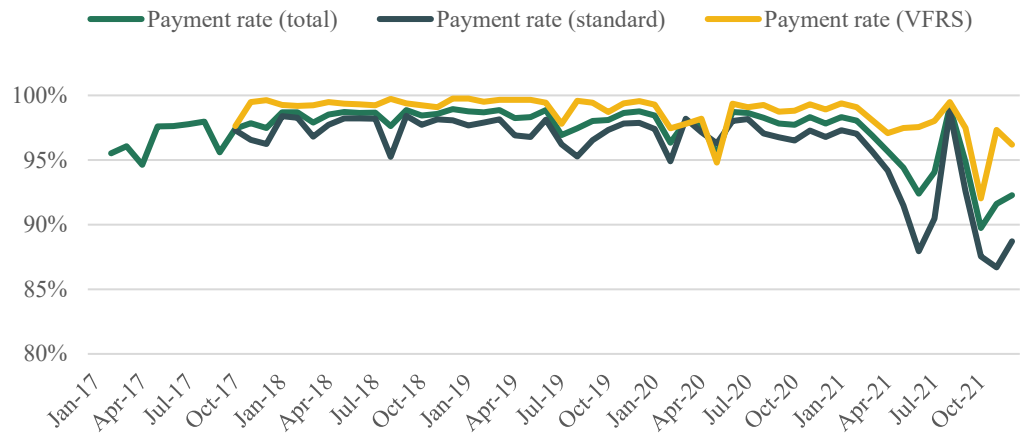
Source: Authors' calculations using data from trips™.

Data from trips™ shows that the bulk of domestic payments are received right at the end of the month, at the time they are due from taxpayers (Figure 4.6). The overall number of payments is slightly less concentrated, potentially suggesting that smaller taxpayers are less likely to comply with payment deadlines.

As outlined above, the GRA has been on an active e-payment drive in recent years, and the trips™ data confirm this rise. In terms of total payment amounts, by early 2020 electronic means of payment (mostly bank transfers) almost matched those made by cheque, which had dominated previously. Interestingly, though, in terms of the total number of individual payments, cash still dominated. This suggests that while large taxpayers had already transitioned to electronic means of payment, smaller taxpayers may have lagged behind. The full transition to electronic payments has likely had a positive effect in so far as it has reduced some of the administrative costs of processing payments, and reduced the potential for leakage. However, the effect on the compliance costs of smaller taxpayers who previously relied on cash is a risk with this universal policy.

As with non-filing, non-payment is monitored and enforced at the individual TSC level. The GRA argues that these cases are followed up closely. At the aggregate level, data provided by GRA suggest that non-payment of *reported* liabilities is a relatively minor issue. In most months, the vast majority of returns are accompanied by payment, though information on the share of liabilities paid on time was not available. The share of returns accompanied by payment is slightly higher for the VFRS in most months, but is also above 95% for the standard scheme throughout most of 2017–2020 (Figure 4.7).

### Figure 4.7. Aggregate VAT payment behaviour in Ghana




Note: Payment rate is the share of VAT returns generating a net liability that are accompanied by timely payment.

Source: Ghana Revenue Authority.

# Effective enforcement

## VAT fraud and evasion

As discussed in Section 2, VAT fraud and evasion can take many different forms, and all VAT systems suffer from fraud and evasion to some extent. In the Ghanaian context, there is currently no quantitative evidence on the overall extent and types of VAT fraud. In itself this is an evidence gap, and enhanced efforts to compile evidence in this respect and monitor evasion and fraud over time would be welcome. The estimation of the 'VAT gap' provides one way of benchmarking overall non-compliance. No such estimates are produced systematically in Ghana: while the authors understand that VAT gap studies have been undertaken in Ghana, none are currently publicly available. More regular VAT gap estimates would be a useful first step to benchmark VAT compliance over time. However, as in many LMICs, data constraints are currently a barrier to producing comprehensive VAT gap estimates for Ghana – mainly because of infrequent updates to Ghana's supply-and-use tables.

In this report we do not seek to provide novel evidence on the different types of VAT fraud or evasion: naturally, such behaviour is difficult to detect with tax data. However, as alluded to earlier, there are a large number of businesses reporting very low levels of sales in Ghana. From 2017 to 2020, of 42,877 firm-year observations reporting positive sales in trips™ (which itself contains businesses positively selected on firm size), a quarter reported average taxable monthly sales of GHS 1,627 or less, for instance. A further 21,322 firm-year observations reported zero taxable sales – a third of the overall number of observations.[36] This is in line with the perceptions of the GRA, who agreed that underreported sales are likely to be widespread. The GRA also pointed to fictitious traders (mainly relating to purchases) and false invoicing as possible (as well as issues specific to the refund system, to which we return). The last-mile problem is perceived as a particular challenge in Ghana. Thus, policies that promote VAT compliance and enforcement for retail businesses and for consumers likely need specific attention.

A common theme arising from discussions with the GRA is that detection of fraud is hampered by information availability and reliability. Recent and ongoing technological reforms undertaken by GRA have a strong focus on improvements in this area. Such reforms are designed to improve both the availability and quality of data (e.g., e-filing and e-

[36] This likely relates to firms filing nil returns since all non-nil filers must have a positive non-zero taxable sales value.

invoicing), and data compilation and utilisation. Examples of the latter include a data warehousing project which aims to link taxpayer data across tax types and across government agencies, and the establishment of the Revenue Assurance and Compliance Enforcement (RACE) initiative in the MoF, providing resources to utilise digitised data for enforcement alongside the GRA.

## Monitoring and audits

Taxpayer monitoring for enforcement processes is a multifaceted and ongoing process. In Ghana – in common with modern tax administrations in many countries – taxpayers are segmented by size. All taxpayers, aside from those in the LTO, are now served by the TSC nearest to them: TSCs cover compliance and debt management, while centralised audit and enforcement functions are covered by the Area Offices.[37]

This segmentation is in line with best practice, especially when resources are stretched. The consolidation of the MTOs and STOs appears to be a welcome simplification for GRA and taxpayers alike, and potentially addresses some unhelpful incentives related to revenue targets at the tax office level that may have affected taxpayer graduation and which were raised by one GRA interviewee in the process of this project. The GRA may wish to consider making the criteria for LTO allocation private in order to prevent the threshold inducing behavioural distortions, such as self-selection into lower-monitoring regimes for less-compliant taxpayers. However, this would come at a cost to transparency too.

Taxpayer monitoring within tax offices – including monitoring of filing behaviour and nil returns – is a core activity in the GRA, although implementation has historically varied somewhat across tax offices. As described previously, officers are supposed to conduct analysis of non- and nil-filing and to follow up with a selection of taxpayers, using a combination of reminders, queries, visits and penalties. Even though evidence on the implementation of such processes was not available, there is a perception among GRA management that these processes are usually followed and there is a reporting structure for this with monthly reports submitted to the GRA headquarters. However, these processes may be limited in some offices due to both data and human resource constraints. Beyond that, systematic monitoring of taxpayer behaviour (e.g., monthly variation in sales, or deviation from industry benchmarks) is thought to be limited. It is again hampered by information quality and availability. The evidence provided by workshop participants highlighted that compliance risks were largely identified using internal sources, and that there might be scope

[37] See https://gra.gov.gh/domestic-tax/large-taxpayer-office/, https://gra.gov.gh/domestic-tax/area-offices/ and https://gra.gov.gh/domestic-tax/tax-service-centres/.

to increase the linkages between assessment processes and the quantification of compliance risks.

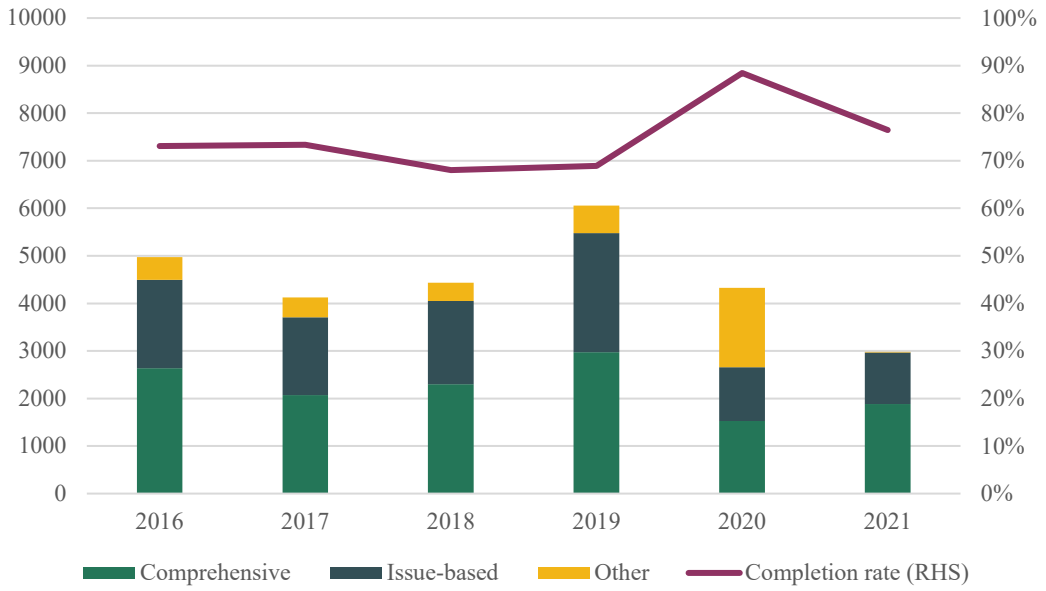
GRA conducts two main types of tax audits: comprehensive audits across all tax types and multiple years, and issue-based audits focused on specific tax types or issues. To guide audit strategies, managers develop an audit plan comprising a target number of both types of audits at the TSC level. The majority of audits conducted are comprehensive, because officers do not want to investigate just one tax type at a time given that there are links between tax types, for instance. This means that VAT audits typically occur as part of the wider audit process.

The process of audit selection in Ghana uses a combination of risk profiling and qualitative intelligence-based information. Risk profiling relies on indicators such as filing and payment metrics, and tax debts. Audit selection can also be triggered by incidental information and auditor experience; officers use a range of information to inform decisions, and the GRA indicate that the approach taken by officers varies; it can be either direct or indirect. [38] Historically, a centralised risk profiling model drawing on data in a more systematic way (e.g., utilising industry benchmarks, matched taxpayer data, or deviations in behaviour) has not been a part of the GRA's enforcement operations. However, the new and integrated data systems will be able to more systematically provide risk profiling, and the GITMIS has such a functionality in development. It will be important to ensure that new risk profiling approaches can integrate historical data from across tax types and external sources; third-party data are currently not used for enforcement purposes. Currently, the GRA does not conduct purely random audits. A small programme of random audits could be considered as a means of informing non-compliance diagnostics and future strategies, and maintaining a broad-based deterrence effect.

Audit information provided by the GRA does not disaggregate by tax type, either for the reason for audit or for the assessed and recovered additional tax liability. In terms of the total number of (new) audits, these typically varied between 4,000 and 6,000 from 2016 to 2020 (Figure 4.8). If these were all VAT taxpayers, this would suggest audit coverage of 10–15%, but in practice this is an upper bound. The number dropped significantly in 2021 to around 3,000, however. Audit completion rates have been relatively stable over time, besides a peak in 2020, and usually sit at around 70%.

[38] The approach is seen to be 'direct' if audits are initiated based on the GRA's standard audit protocols, and 'indirect' if the audit processes are initiated based on insider or third-party information.

## Figure 4.8. Trends in the number of tax audits in Ghana, excluding refund audits




Note: Refund audits excluded. The number of audits shown on the left-hand axis is the number of new audits initiated each year; the completion rate shown on the right-hand axis is the share of all audits (including those carried forward from previous years) completed in each year.

Source: Ghana Revenue Authority.

Overall, audits assessed an additional GHS 318 million of tax liability in 2016, rising to GHS 817 million by 2019 among non-LTO taxpayers. Data on audit assessment for LTO taxpayers was not consistently available for this analysis. In 2016, however, the audit assessed among LTO taxpayers constituted close to a quarter of total audit assessment. The sum recovered in each year from 2016 to 2019 amounted to only 8–11% of the amount of unpaid tax and penalties due (see the subsection on penalties below).[39] Thus, there is a significant gap between assessment and recovery that requires further attention; in this project, the data required to study this gap in more detail were not available. More broadly, the GRA does not currently conduct comprehensive evaluations of their audits. Embarking on systematic evaluation, including incorporating some number of random audits, would be a prudent step to help understand what works and to target administrative resources optimally.

[39] In 2020, there was a large drop in assessed additional liability, but no such fall in tax recovered, implying a much higher recovery rate. This may have been an anomalous year for many reasons, however.

## Penalties

The legislation underpinning VAT in Ghana provides for evasion to be penalised through both administrative penalties (up to three times the amount evaded) and/or criminal prosecution (imprisonment for up to 5 years). Having both options is unusual internationally. Data on the use of penalties were not available for this study. However, criminal prosecution in relation to VAT is little used in practice: in 2021, all 49 tax prosecution cases related to debt management, and none concerned VAT fraud. The GRA expressed the view that the prosecution of tax fraud cases can be improved, including through increased use of the recently established tax tribunals and by providing greater tax education to judges to bolster prosecutions and provide a more credible deterrent. There may also be scope to escalate simpler cases more quickly.

## VAT withholding

The Value Added Tax (Amendment) (No. 2) Act, 2017 (Act 954) provided for the appointment of VAT withholding agents in Ghana, to include registered entities selling zero-rated supplies (i.e., primarily exporters) and selected entities appointed by the GRA. Approved agents are required to withhold VAT at a rate of 7% of the taxable output value of standard rated supplies and to issue a Withholding VAT Credit Certificate to the supplier, who is then able to input this credit on their filed VAT return. As of May 2018, the GRA had appointed 118 institutions as withholding agents – largely a mixture of government institutions, financial institutions, mining companies, petroleum subcontractors, and a smaller number of manufacturers and telecommunication businesses. The primary goal of this reform was to increase revenues – either through the direct effect of the withholding mechanism, or through the more indirect channel of incentivised tax registration. However, as discussed in Section 2, VAT withholding has other implications too: most notably, auditing withholding agents becomes both more important and more difficult, and more suppliers are likely to find themselves in excess credit positions. We discuss each of these in turn.

Withholding agents become particularly important organisations under a withholding regime. As (effectively) part of the GRA's broader tax administration apparatus, they are expected to account for a larger share of tax revenue remitted than beforehand. However, they also become more complex to monitor and audit, since the VAT collected by these agents depends not only on their own business operations, but also on their suppliers. This means that standard risk profiling approaches may no longer apply for these taxpayers or institutions, and more administrative resources are likely required to conduct more focused audits. As discussed earlier, the reported lack of systematic risk profiling approaches used by the GRA

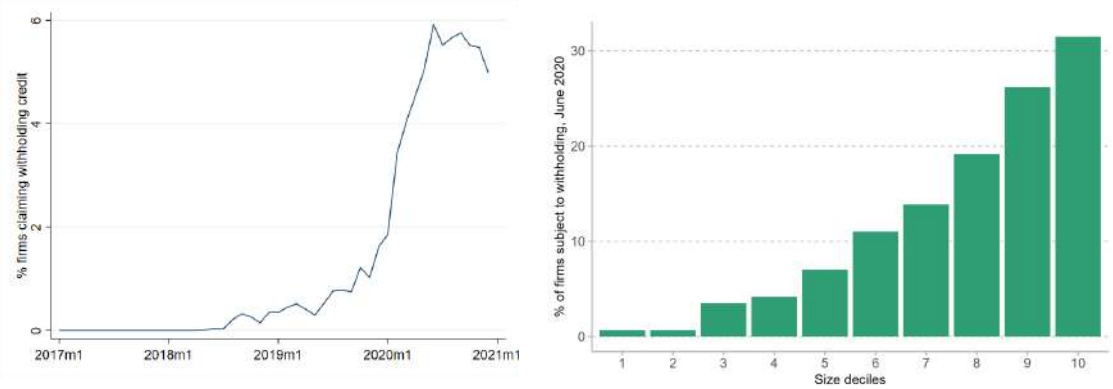
perhaps makes this less of a concern. Still, the disproportionate role of withholding agents in the VAT system necessitates greater monitoring efforts. Aggregate VAT withholding revenues aside, no data were available on the reporting of withholding agents for this project. However, tax filing statistics show highly volatile records on the number of taxpayers registered and filing for 'withholding domestic VAT', with the registered number reported ranging from under 100 to nearly 600 on a month-to-month basis in 2021.

As discussed in Section 2, in a perfectly functioning system, the withholding mechanism would not affect net revenues at all: the only things that would change are the agents remitting the liability and potentially the timing of accrued revenues (e.g., because different/more businesses may request refunds, and/or request refunds at different times). Data from the GRA suggest that revenues remitted via VAT withholding amounted to GHS 200, 160 and 190 million in 2018, 2019 and 2020 respectively, representing 5.2%, 3.1% and 3.3% of gross VAT collections in 2018, 2019 and 2020. This number should be perfectly offset by increases in withholding credits by businesses which are subject to withholding, if businesses correctly declare their withholding credits. From the sample of administrative tax data available – which is not complete but does account for the majority of total VAT revenues – claimed credits amounted to GHS 3, 44 and 642 million in 2018, 2019 and 2020. In 2018 and 2019 withholding VAT revenues substantially exceeded observed credits, while the reverse was true in 2020.[40] Over the course of these three years, the aggregate figures are fairly similar, although the total credits claimed (GHS 690 million) do exceed the withheld VAT remitted (GHS 550 million) somewhat. The difference in 2018 and 2019 could be explained by businesses that are subject to withholding failing to report withholding credits, perhaps due to lack of familiarity with the system. Excess observed reclaim of credits in 2020 is more puzzling but may reflect factors such as timing (i.e., credits from 2018/19 appearing in 2020, even though this should not occur), withholding agents not remitting all the tax withheld, or VAT suppliers fraudulently claiming excess withholding credits.

Note that the fact that the amount of withholding credits exceeds the amount of withheld VAT remitted does not mean that the withholding regime has reduced revenues. If withholding increases compliance, by encouraging firms to report sales that they otherwise would not have, it can still increase revenues. We discuss this issue more in Section 5.

**Figure 4.9. Share of businesses claiming VAT withholding credits in tax returns over time (left) and by sales decile in June 2020 (right)**

[40] The 2020 figure does include some large outlier observations, however (e.g., the top 10 withholding tax credit claims account for nearly half of the observed total in 2020).




Note: Figures show the share of businesses in the trips™ dataset who claim any positive amount of VAT withholding credits in each month. The denominator in each graph is the population of businesses with fully processed standard VAT returns.

Source: Authors' calculation using data from trips™.

More detailed analysis of withholding credits, shown in Figure 4.9, shows a significant rise in the share of businesses claiming withholding credits at the beginning of 2020, with the share in the sample available stabilising in the range of 5–6%. As shown in the right-hand panel, such claims are especially concentrated among larger businesses, with 31% of businesses in the top decile claiming withholding credits in June 2020. This is intuitive, as relatively larger businesses are likely to have more customers overall, including withholding agents. In addition, businesses of a similar size are more likely to transact with each other, so large businesses may be particularly likely to transact with withholding agents, who are themselves large businesses or institutions.

The introduction of the VAT withholding mechanism interacts with other reforms to the VAT and levies which happened at around the same time. At the time of policy design for VAT withholding, where VAT and the NHIL (which at the time functioned exactly like a VAT) totalled 17.5%, a 7% rate of withheld VAT implied that 40% of output VAT was withheld. However, once the NHIL was made unreclaimable in August 2018, and the GETFL replaced 2.5% of VAT, the share withheld rose to 56%. This therefore increases the likelihood that businesses subject to withholding generate a credit and thus potentially require a refund. As the calculation in Box 4.1 shows, whether a firm generates a net VAT credit depends on its taxable sales and inputs, which depends partially on its level of value added. All else equal, the reform to the NHIL and GETFL shifted the share of businesses that are likely to generate a credit upwards. The GRA suggest that when taxpayers generate a VAT credit (including because of tax being withheld), they may be permitted to offset this against their liability for other taxes such as the NHIL, GETFL and CHL. However, the GRA must initiate this process, and it requires verification by audit. Thus, although this may reduce the number of refund claims, it would appear to impose a non-negligible administrative cost. This suggests

that the interaction between the withholding mechanism and the levies, which are unreclaimable, adds to the administrative complexity of the tax system, and imposes costs on businesses subject to withholding if refunds are slow.

### Box 4.1. The VAT rate, withholding, and VAT credits

When some sales are made to withholding agents that withhold VAT to the value of 7% of taxable supplies, a registered VAT taxpayer's net VAT payment is given by

$$V = t \times S_1 + (t - 0.07) \times S_2 - t \times I_1 - 0 \times I_2$$

where $t$ is the VAT rate, $S_1$ are sales to purchasers which are not withholding agents, $S_2$ are sales to withholding agents, $I_1$ are VATable intermediate inputs, and $I_2$ are non-VATable intermediate inputs. A VAT credit, whereby input VAT plus withheld VAT exceeds output VAT, and thus a potential refund claim, is generated when $V$ is negative. In the extreme case where all sales are to withholding agents and all intermediate inputs are VATable, a credit is thus generated when

$$(t - 0.07) \times S_2 - t \times I_1 < 0,$$

$$(S_2 - I_1)/S_2 < 0.07/t.$$

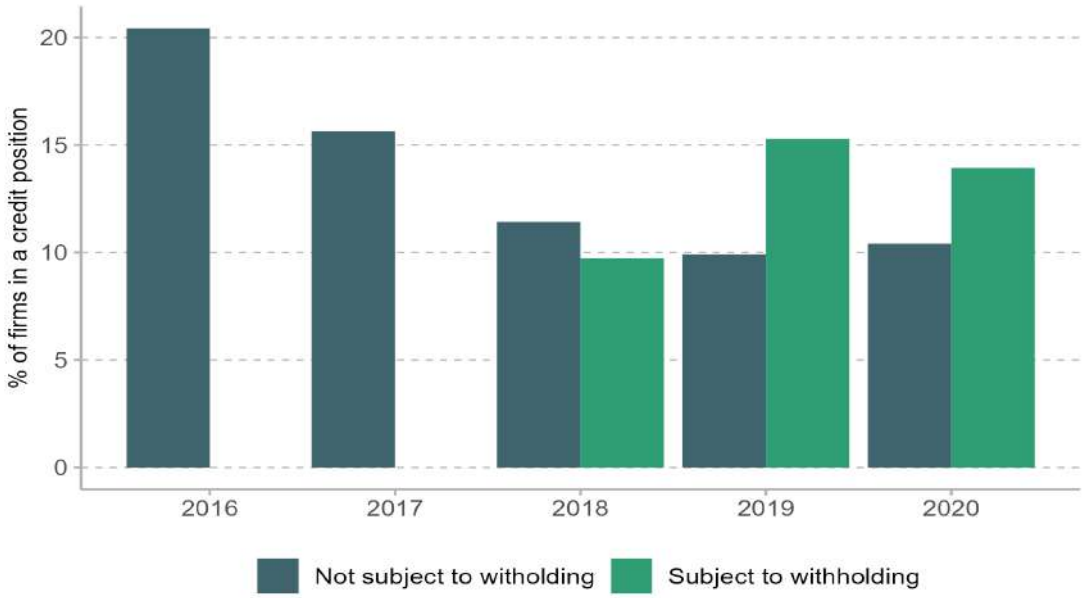
$(S_2 - I_1)/S_2$ is the ratio of firm value added to sales. Thus, this calculation tells us that low value-added businesses will be more likely to generate a credit under withholding, all else equal. In addition, for a given withholding rate, a lower statutory VAT rate increases the set of businesses that will generate a credit. In particular, in this extreme case, the cut-off point in the distribution of firm value-added ratios is given exactly by the withheld share of VAT. Thus, with a 7% VAT withholding rate and a 17.5% output VAT rate (which was the case prior to 2018), the cut-off point is a value-added ratio of 0.07/0.0175 = 40%. For a 12.5% output VAT rate (the situation between 2018 and 2022), this rises to 56%. And for a 15% output VAT rate (the rate now applicable) the cut-off point is a value-added ratio of 46.7%. To return the VAT withholding rate to its equivalent level at the point of policy design would require it to be 0.4 × 0.15 = 6%.

Results from trips™ data in Figure 4.10 do indeed suggest that businesses subject to withholding (the green bar) are 4–5 percentage points more likely to be in a refund position in the month that they claim the withholding credit.

One concern is that businesses that became subject to withholding after the reform are not comparable to other businesses (perhaps because they have higher levels of value added compared to other businesses). To address this concern, we consider whether businesses are

more likely to report being in a credit position after becoming subject to withholding (effectively comparing businesses to themselves in the past). The full results are in Table A.1 in the Appendix and suggest that when a firm becomes subject to withholding, it is 6 percentage points more likely than before to be in a credit position, in line with the aggregate results in Figure 4.10. It should be noted that a credit position does not necessarily mean that the firm will apply for a VAT refund, as credits can be used to offset future tax liabilities.

### Figure 4.10. Share of businesses in a credit position by withholding status




Note: Figure shows the share of businesses in a credit position (over the course of the entire year) separately for businesses which are subject to withholding and businesses which are not subject to withholding. A firm is defined to be subject to withholding if it declares any withholding credits.

Source: Authors' calculation using data from trips™.

# VAT refunds

As highlighted in Section 2, VAT refunds have been described as the 'Achilles heel' of the VAT system in LMICs. On the one hand, long refund processing times can act as a severe cash-flow constraint to businesses which are legitimately in receipt of refunds. In a high-inflation context, these delays (which often do not accrue interest) effectively act as an extra tax on businesses with zero-rated sales. On the other hand, the refund system is a target for fraud and tax authorities have good reasons to be vigilant on refund payments.

In Ghana, tax refunds – including VAT refunds – are paid out of the GRA's General Refunds Account, which is provided for in the Revenue Administration Act, 2016 (Act 915).[41] This allocates 6% of total tax revenue for the purpose of all tax refunds, though in practice, total refunds are typically in the region of 2–3% of tax revenue.

Businesses that generate credits are, in the first instance, expected to use their credits to offset against future liabilities. As discussed previously, this is standard practice in many countries and is a practical approach to managing finite administrative resources. Apart from exporters (defined as having exports exceeding 25% of total supplies within the tax period), businesses can only apply for a refund when an excess amount is outstanding after 3 months or more. Taxpayers may sometimes be permitted to offset their credits against other tax liabilities, but only after the GRA initiates this process and subject to audit.

Applications for VAT refunds are made locally at the taxpayer's TSC. Taxpayers must complete a Refund Claim Form accompanied by, at a minimum, relevant tax invoices and customs documentation. However, approval is managed centrally by the GRA, with the refund account held at head office. This means that claims data are held locally, whereas settled claims data are centralised, and thus there are no centralised data for monitoring claims and overall metrics related to VAT refunds.

The Revenue Administration Act states that taxpayers are required to submit relevant documentation in support of their refund application which should be retained by the Commissioner-General for audit purposes, and a decision on the application should be made within 60 days. Once a payment decision is reached, the Commissioner-General should offset the excess tax against outstanding tax liabilities and refund the remainder to the taxpayer within 90 days. Interest should be added to refunds for late payment thereafter.

No data were available for this report on the timeliness of VAT refund payments in Ghana, nor the application of interest or offsetting against other tax liabilities. In practice, the GRA suggests that nearly all businesses applying for refunds for the first time are audited, whereas those with a history of refunds (e.g., exporters) have their claims fast-tracked, and are subject to intermittent audits. The fragmented nature of information sharing across offices and the lack of electronic invoicing were both raised as barriers to quickly verifying refund claims. Given that the GRA does not hold centralised data on claims or monitor the time taken to

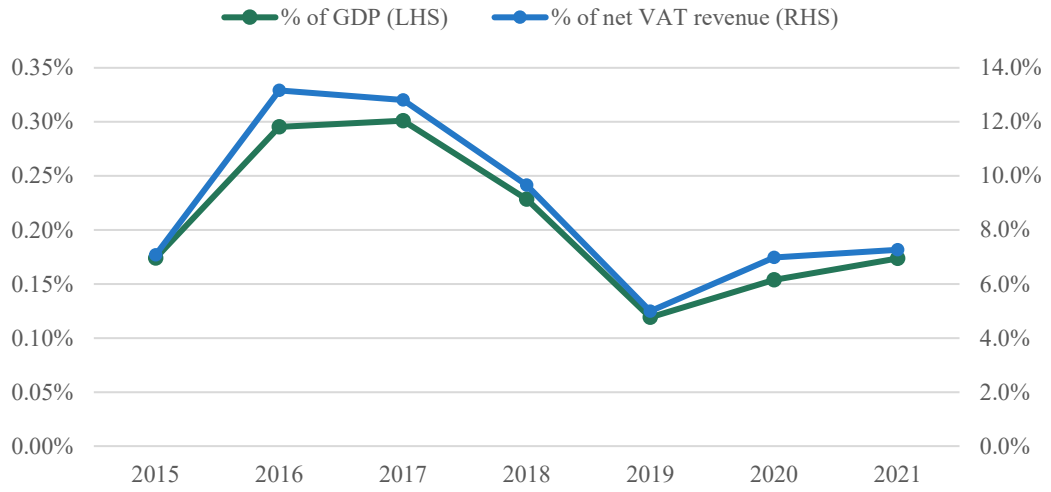
[41] Though the VAT Act provided for a VAT Refund Account, this was superseded by the Revenue Administration Act.

process refund claims, it is unsurprising that no statistics are published regarding the performance of the VAT refund system.

## Prevalence

Total VAT refunds in Ghana ranged between 0.12% and 0.30% of GDP from 2015 to 2021, equivalent to 5–13% of (net) VAT collections (Figure 4.11). Though VAT refund data from before 2015 were not available for this report, there was a significant jump in overall tax refunds (inclusive of all taxes) between 2014 and 2016 in Ghana, from GHS 0.16 billion in 2014 to GHS 1.45 billion in 2016, according to data from the MoF. This direction of travel is mirrored in the jump from 2015 to 2016 in VAT refunds. However, since peaking as a share of GDP and of net VAT revenue in 2016 and 2017, VAT refunds have fallen relative to both net VAT revenue and as a share of GDP. The fact that reliable data on refunds disaggregated by tax type are not available for a longer period is a significant evidence gap and highlights some of the basic data quality issues faced by policymakers and administrators.[42]

### Figure 4.11. VAT refunds in Ghana over time




Note: VAT refunds based on GRA data on 'indirect refunds'.

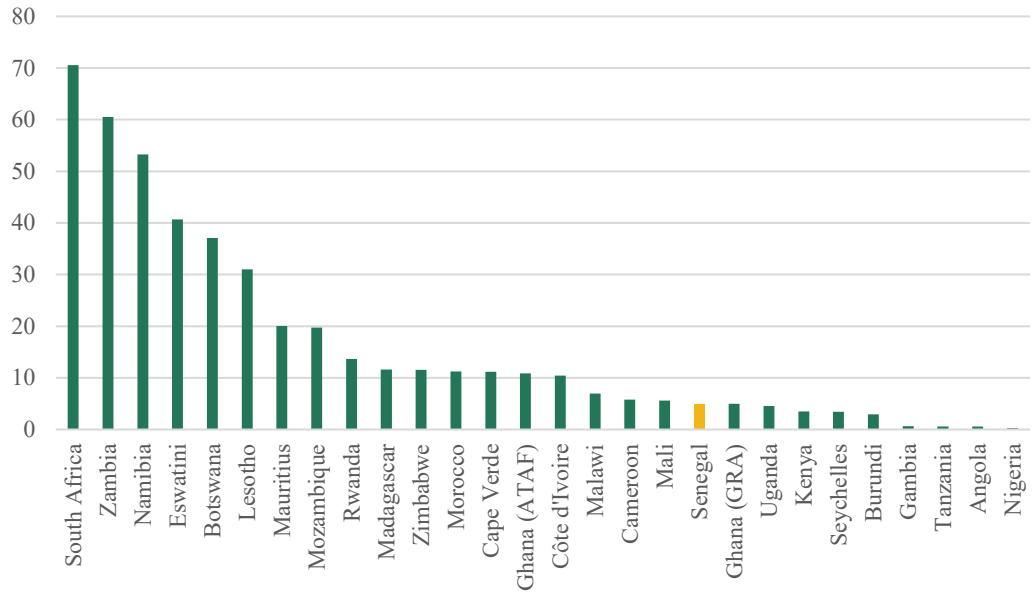
Source: Authors' calculations based on data from Ghana Revenue Authority and Ghana Statistical Service.

To benchmark Ghana's level of VAT refund payments, Figure 4.12 shows VAT refund payments as a share of GDP and as a share of net VAT revenue in a range of African

[42] While the OECD Revenue Statistics database contains information on 'VAT refunds', this in fact seems to cover all tax refunds in Ghana, as reported in MoF accounts.

countries, using data from the ATAF Databank. Among comparable countries with data, Ghana's VAT refunds are relatively low according to data provided by the GRA (note that the figures provided in the ATAF Databank for Ghana differ from those provided by the GRA).[43] There is, however, wide variation: some countries (e.g., South Africa, Namibia) have considerably higher levels of refunds while countries such as Senegal, Uganda and Kenya have similar levels to Ghana.[44]

**Figure 4.12. VAT refunds in Africa as a percentage of net VAT revenue, 2019**




Source: ATAF Databank and Ghana Revenue Authority.

This scale of VAT refunds looks low, given Ghana's economic profile. As discussed in Section 2, refund payments are a crucial feature of VAT systems, and in fast-growing and open economies such as Ghana there is scope for very significant levels of legitimate refunds. Though only indicative, the formula of Ebrill et al. (2001) provides a benchmarking framework here. They suggest that under a fully functioning, single-rate, invoice-credit VAT system, refunds as a proportion of (net) VAT revenues would be:

$$\frac{\alpha i + (1-\lambda)z}{e}$$

[43] Data for Ghana come from the GRA. While the ATAF Databank also contains data for Ghana, these data are provided in USD PPP and the parameters underlying transformations from national currencies are not provided. Using PPP conversion data from the World Bank, the values for Ghana in the Databank are significantly different than those from the GRA, and thus we favour the data provided by the GRA directly.

[44] Among high-income countries, the ratio of refunds to net VAT revenue is 43% (Pessoa et al., 2021).

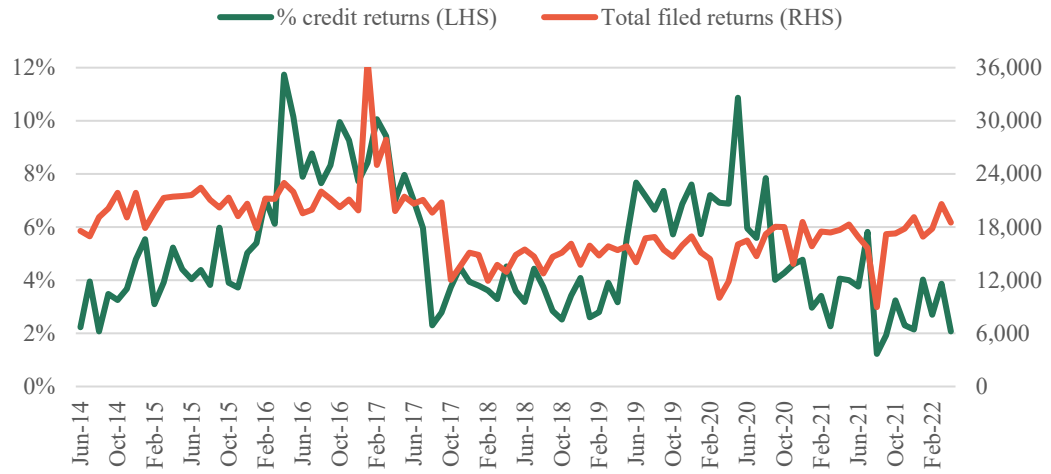
where $i$ and $z$ are shares of investment and zero-rated items (including exports) in GDP, $\alpha$ is the proportion of investment generating excess credits, $\lambda$ is the ratio of value added to sales in the zero-rated sector, and $e$ is the C-efficiency ratio. Calibrating export and investment ratios of 33% and 18% of GDP for Ghana (using national accounts data), a C-efficiency ratio of 30% (see Section 5), assuming 5% of investment generates excess credits (a conservative assumption), and taking a value-added ratio of 50% in the export sector suggests 58% of net VAT revenue could legitimately be required for VAT refunds. This is simply intended as an illustrative exercise, and one can debate the appropriate assumptions here. Moreover, the large informal and exempt sectors in Ghana are likely to decrease the share of revenue that one would expect to be refunded, since such businesses pay some VAT on inputs and can never claim a refund. Nonetheless, the gap between this illustrative figure and the actual refunds paid is indicative that some businesses may not be accessing legitimate refunds. Given that some of the other countries with low levels of VAT refunds shown in Figure 4.12 share similar economic characteristics, the range of values in the chart may simply reflect that many African countries should have higher levels of VAT refunds.

We do not have VAT refund data beyond the aggregate series provided by the GRA. Thus, we cannot observe the number of individual businesses that received VAT refund payments, or how many separate refund claims were made. However, we have data on the number of credit returns (returns with a negative VAT liability) submitted to the tax office in each month. Although these data do not directly address the issue of how many refund claims are made, analysis of trends in the aggregate number of credit returns can provide an indication of the potential number of refund claims that could be made in each month.[45] In this vein, we observe that there were 10,912, 26,095 and 13,293 'credit returns' for VAT in 2019, 2020 and 2021 respectively, amounting to 3.3%, 5.0% and 2.4% of all filed VAT returns.

Focusing on standard VAT returns specifically in Figure 4.13 – since they are the taxpayers which may generate refund claims – the share of returns generating credits over time has varied significantly. Notably, there was a clear decline in the second half of 2017, perhaps reflecting the migration of taxpayers onto the VFRS scheme. There are also clear changes in 2019 and 2020.

[45] Taxpayers can only apply for a VAT refund when they file credit returns consistently for three consecutive months.

## Figure 4.13. Percentage of 'credit returns' in total standard VAT returns




Note: Credit returns are returns with a negative VAT liability.

Source: Ghana Revenue Authority.

We do not have data on which businesses (including their size, sector or tax office) receive VAT refunds, and the administrative tax data accessed from trips™ do not contain a variable indicating a taxpayer's accumulated credit or debit balance. However, aggregating liabilities and credits over all months observed in the data allows us to obtain a proxy for the net position of individual taxpayers. The top graph in Figure 4.14 shows that there are large differences in the share of businesses that report being in a net credit position, depending on the time horizon considered. By the start of 2016, around 20% of all businesses in an unbalanced panel of businesses filing returns that are captured in the trips™ data were in a net credit position according to their cumulative tax returns.[46] However, by mid-2018 this figure had stabilised at around 10%: over longer time periods, reported negative liabilities are often offset by positive liabilities. However, any businesses with legitimate, unrefunded net credit positions are still disadvantaged in the interim period due to capital being tied up.

The bottom graph in Figure 4.14 is the sum of accumulated credits (or negative VAT liabilities), only for businesses which are in a positive accumulated credit position in each period. Between 2016 and the end of 2019, the total accumulated credit position of taxpayers (the unbalanced panel) in trips™ in net credit positions is nearly GHS 3.4 billion. This is a

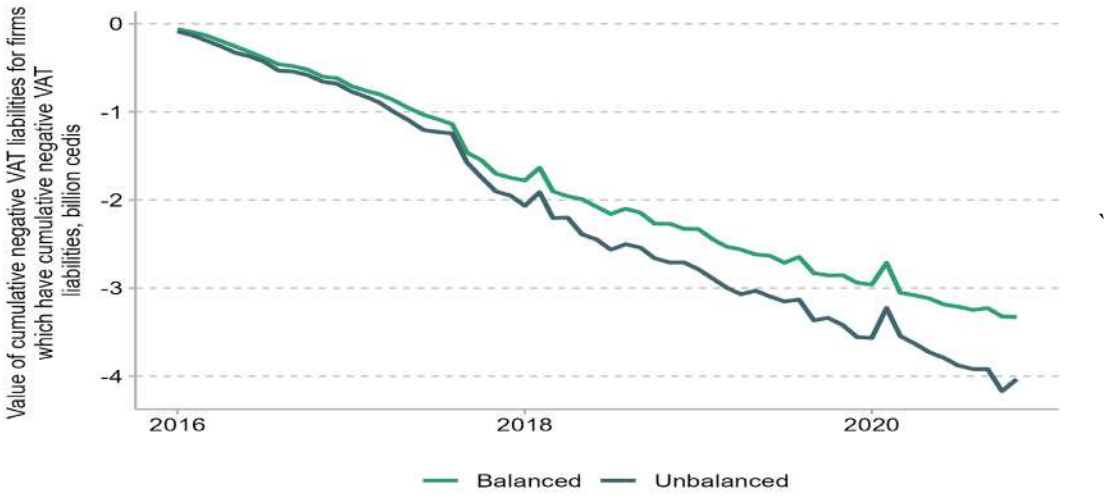
[46] In this context, a balanced panel refers to the same sample of businesses in each period, whereas an unbalanced panel means that the sample of businesses included in the analysis varies across periods.

lower bound for possible VAT refund claims for two main reasons. First, the trips™ data do not contain the universe of businesses. Second, the sample is restricted to firms which are in an accumulated credit position since 2016, which are not the only firms eligible for VAT refunds. For example, there may be a firm that generally has large positive VAT liabilities, but generates a VAT credit for three consecutive months. This business would not be used in the sample, as it is not in an accumulated credit position since 2016, but would be liable for a VAT refund. In contrast to this lower bound figure of GHS 3.4 billion, total VAT refunds made are GHS 2.6 billion between 2016 and 2019.

Clearly, these data do not allow us to observe which reported credit positions result in refund claims, let alone assess which of these positions are legitimate. However, the disparity again points towards VAT refund payments in Ghana being lower than one might expect. This disparity might be overstated when the GRA permits taxpayers to offset their VAT credits against other tax liabilities – something that we cannot observe with these data.

Finally, using the same data, we can study in which sectors net credits are generated (Figure 4.15). Mining, quarrying and upstream oil and gas dominate, accounting for around 75% of the total (around GHS 2.7 billion) between 2016 and 2020. This is intuitive given the size and export intensity of such businesses in Ghana. The second and third largest sectors are manufacturing, and wholesale and retail respectively, with all other sectors only accounting for small shares individually.

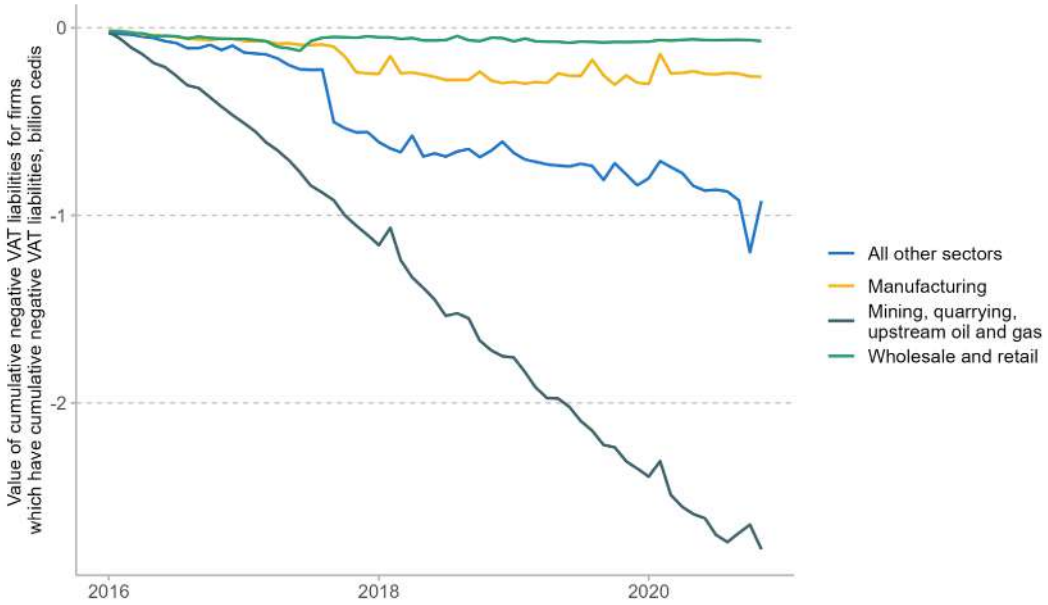
**Figure 4.14. Share of businesses with accumulated VAT credits (top) and value of accumulated negative VAT liabilities (bottom) reported in administrative tax data**


Note: The top graph shows the share of businesses observed in the tax data which in a given month have reported cumulative negative liabilities (i.e., accumulate credit position) since 2016. The bottom panel shows the aggregate value of negative liabilities (i.e., accumulated credit position) among businesses which have reported cumulative negative liabilities up until that month. The unbalanced panel is the sample of all businesses with positive sales and positive purchases. The balanced panel is the sample of businesses that appear at least once every year between 2016 and 2020.

Source: Authors' calculations using data from trips™, including both lodged and processed returns.

**Figure 4.15. Value of cumulated negative VAT liabilities reported in administrative tax data**




Note: Shows the aggregate value of negative liabilities among businesses who have reported cumulative negative liabilities up until that month, by industry. Calculated using an unbalanced panel. Manufacturing refers to ISIC series C; mining, quarrying, upstream oil and gas refers to ISIC series B; wholesale and retail refers to ISIC series G. Calculated using unbalanced panel.

Source: Authors' calculations using data from trips™.

## Processing

To the best of our knowledge no systematic forecasting is undertaken specifically for VAT refunds. Beginning routine VAT refund forecasting would provide a better benchmark for the level of legitimate refund claims to be expected, which may become increasingly useful as GRA expands the amount of data it can use to monitor and review refund claims.

Overall, greater monitoring and reporting on the processing of VAT refunds should be a priority. Forecasting VAT refund amounts, setting targets for processing times, and reporting publicly on refund performance metrics would help to build transparency and accountability to ensure the refund system works efficiently. In a fast-growing and export-intensive country such as Ghana, an effective refund system is important for businesses that are drivers of economic growth.

## Enforcement

The GRA indicated that it has concerns about fraudulent VAT refund claims, which are perceived to be widespread and are therefore a key focus for VAT enforcement. This likely informs the GRA's approach to refund assessment, decision-making and payment.

Enforcement efforts are heavily focused on refund claims and the pre-payment stage in the refund process. The pre-payment audits conducted by the GRA are distinct from the main audit process, which also includes a small number of 'refund audits' covering investigations into tax refunds (of various types) which have already been made (Table 4.1). Though the data to assess the significance of the potential bottleneck caused by the practice of auditing all new refund claimants are not available, there may be a case for considering the prioritisation of resources and implications of this approach. In particular, if the focus on the pre-payment stage is creating cash-flow problems for new businesses, it may be worth considering auditing only a subset of initial refund claims at the pre-payment stage, and taking a broader approach to refund audits which can focus on specific periods or issues as they arise – effectively increasing the number of 'refund audits' shown in Table 4.1.

**Table 4.1. Refund audits, 2016–2021**

| | Brought forward | Initiated | Outstanding | Completed | Carried forward |
|---|---|---|---|---|---|
| 2016 | 3 | 26 | 29 | 23 | 6 |
| 2017 | 6 | 161 | 167 | 139 | 28 |
| 2018 | 28 | 70 | 98 | 66 | 32 |
| 2019 | 32 | 28 | 60 | 19 | 41 |
| 2020 | 25 | 37 | 62 | 41 | 21 |
| 2021 | 2 | 44 | 46 | 37 | 9 |

Note: Refund audits are investigations into tax refunds already paid out, as opposed to the initial checks carried out associated with new VAT refund claims.

Source: Ghana Revenue Authority.

Such an approach could be significantly bolstered by a system to risk-assess refund claims. The GRA's current universal approach to refund audits means that systematic risk profiling is not used. Methods to risk-profile taxpayers making refund claims according to their characteristics and reporting behaviour are standard in many tax administrations, and are increasingly feasible given the rapidly improving data environment in the GRA. This improving data environment could also strengthen the ability of officers to scrutinise the individual claims made by taxpayers. For instance, anecdotal evidence suggests that duplicate invoices are sometimes found in refund claims, and electronic invoices should in theory minimise this in future. Over time, third-party data could also be used to systematically check

refund claims, but this would require the ability to access, integrate and use external data effectively.

# 5. Analysis of revenues

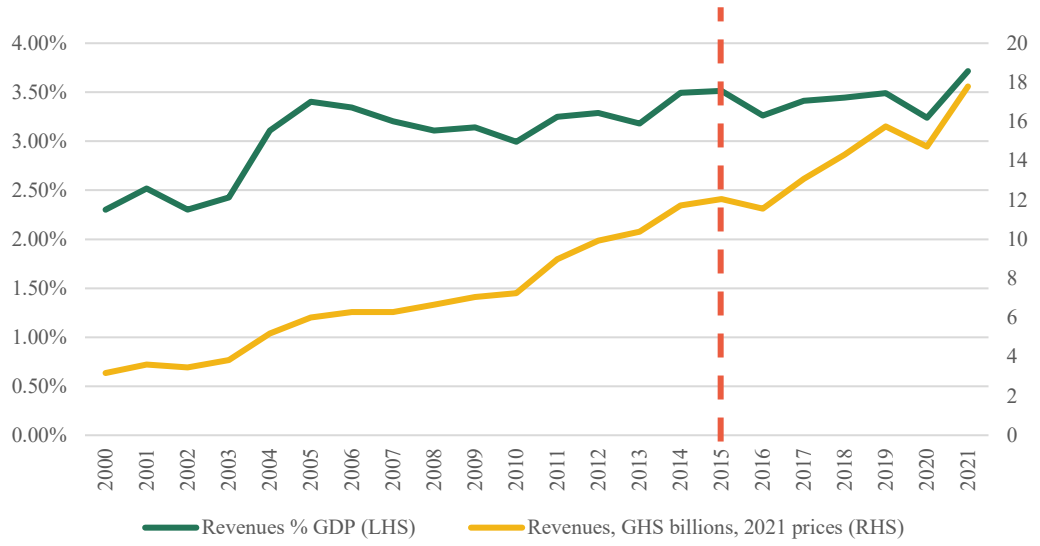
In most countries, VAT is one of the most important single tax types in terms of revenue collections, and Ghana is no exception in this respect. Thus, understanding how and why VAT revenue collections evolve is a crucial component of overall revenue planning and of the evaluation of the VAT system as a whole. In this section, we comprehensively describe aggregate developments in revenue collections from VAT and the parallel levies in Ghana since 2000. We then seek to explore the drivers of this revenue performance through the lens of structural tax gap estimation and policy evaluation of specific reforms.

## Aggregate trends

### Overview

Figure 5.1 charts the evolution of VAT and levy revenues in Ghana since 2000. The VAT system refers to all domestic and import VAT, VFRS, NHIL, GETFL and CHL, and nets off VAT refunds from 2015 onwards where data are available. This shows that since 2000, total gross VAT and levy revenue grew steadily in real terms, from GHS 3.2 billion in 2000 (at 2021 prices) up to GHS 17.8 billion in 2021. VAT and levy revenue as a share of overall economic output has exhibited significant growth since 2000 too: as a percentage of GDP it totalled 2.3% at the turn of the millennium and 3.7% in 2021. However, much of the growth in this tax-to-GDP ratio occurred between 2000 and 2004, when the figure reached 3.1%. From then, it varied between 3% and 3.5% of GDP in every year until 2021. Figure A.2 in the Appendix also shows the VAT and levy revenue-to-GDP ratio using non-oil GDP in order to demonstrate that using this measure instead has little impact on the main trends identified. This overall pattern of flatlining (relative) revenue is not what one would expect if tax registration numbers and compliance were increasing alongside broader economic growth and development, unless this growth is significantly concentrated in sectors which do not pay VAT and levies.

## Figure 5.1. Overall VAT and levy revenues, 2000–2021

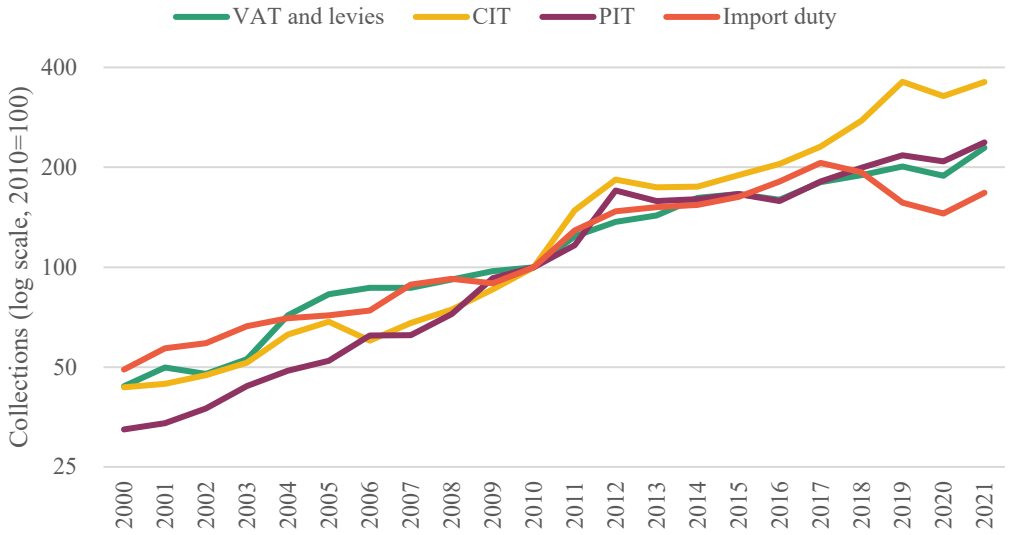



Note: VAT and levy revenues include VAT, VFRS, NHIL, GETFL and CHL. Prior to 2015, revenues are presented in gross terms (i.e., excluding VAT refunds); thereafter, refunds are subtracted from gross revenues. VFRS revenues are only available after 2017, and not for the earlier iteration of the VFRS from 2007 to 2013. Nominal series are deflated using the GDP deflator.

Source: Ghana Revenue Authority and Ghana Statistical Service.

However, this relatively slow growth of revenue is not unique to VAT and the associated levies in Ghana. Figure 5.2 shows the growth of real-terms VAT and levy revenue alongside corporate income tax, personal income tax and import duty, with each series normalised to 2010 values. In aggregate, VAT and levy revenue grew at a similar rate to personal income tax revenue between 2010 and 2021, though the uptick in VAT and levy revenue in 2021 specifically is an important reason for this aggregate observation. Corporate income tax revenue collections have grown much more quickly though, and were more than 260% higher in 2021 in real terms than in 2010. Import duty revenue also grew at a similar pace to net VAT and levy revenue between 2010 and 2018, but reforms and economic shocks since then (which we return to shortly) have reduced real-terms import duty revenue substantially.

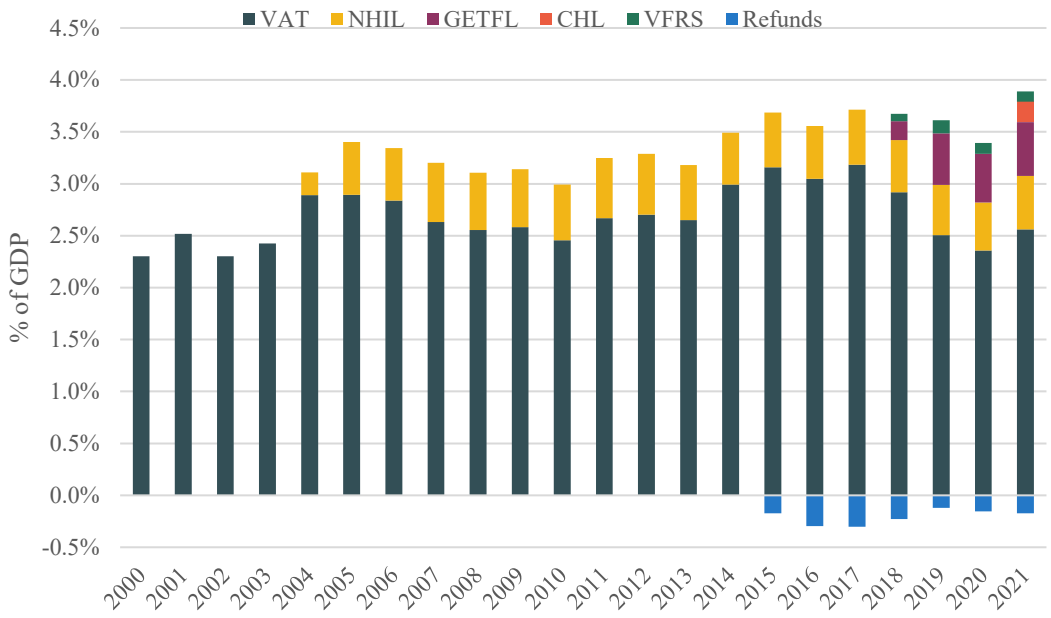
## Figure 5.2. Indexed evolution of revenues from key tax types (real terms, 2010=100)




Note: The figure plots the annual trends in revenues from the four main tax types indexed to 2010 values; Net VAT and levy revenue is the sum of revenues from the VAT system, VFRS and the levies (GETFL, NHIL and CHL) minus refunds. Refunds are subtracted from VAT and levy revenues only from 2015 onwards.

Source: Ghana Revenue Authority and Ghana Statistical Service.

## Figure 5.3. VAT and levy revenue components, 2000–2021




Note: VAT refund data are not available prior to 2015. VFRS revenues are only available after 2017, and not for the earlier iteration of the VFRS from 2007 to 2013.

Source: Ghana Revenue Authority and Ghana Statistical Service.

Decomposing the overall revenue series for VAT and the levies sheds further light on the different components underlying the aggregate trends shown above. Figure 5.3 illustrates the respective contributions of standard VAT, NHIL, GETFL, CHL, VFRS and VAT refunds to the overall VAT and levy tax-to-GDP ratio. Unsurprisingly, standard VAT is the largest contributor; however, the other parallel taxes and levies help to reconcile some of the main trends in Figure 5.1. For instance, the growth in revenues in 2004 and 2005 appears to be at least partially driven by the introduction of the NHIL, which added 2.5% to the effective VAT rate. And the jump in revenue in 2021 partially comes from the new CHL.

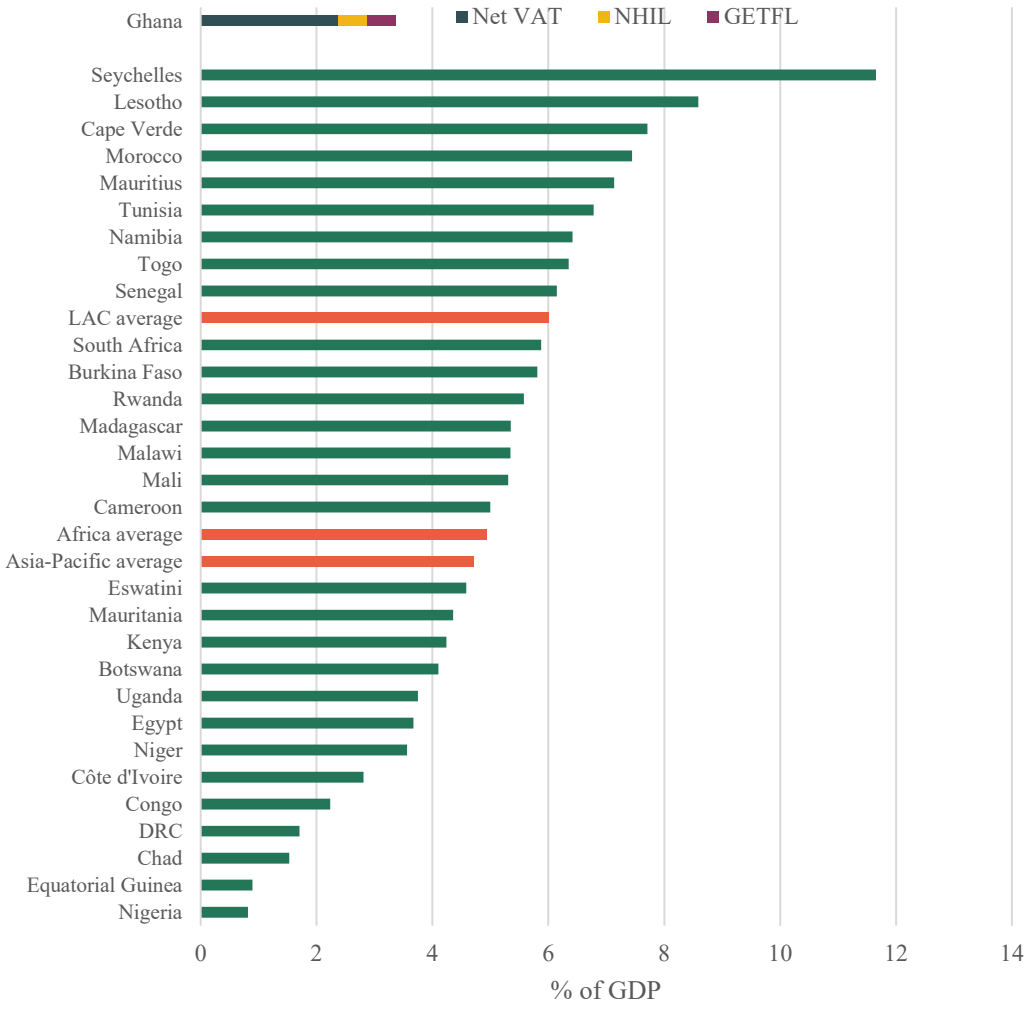
Outside of these specific periods where new taxes were introduced, NHIL and GETFL revenues are quite stable relative to GDP, whereas VAT appears to be more volatile. There are a number of reforms within VAT specifically that play a role here, including a 2.5 percentage point increase implemented in 2013, the introduction of the VFRS scheme in 2017, and a 2.5 percentage point reduction in the standard rate in the second half of 2018.

While VAT refund data are only available from 2015 onwards, the data available show that refunds also play a role in aggregate revenue trends. Aggregate tax refund data from the MoF show a significant increase from 2014 to 2016 that is mirrored in VAT refunds specifically jumping from 2015 to 2016, reducing net VAT revenues. However, in recent years VAT

refunds fell as a share of GDP and as a share of VAT collections – from 0.3% of GDP in 2016 and 2017 to 0.1% of GDP in 2019 and 0.15% in 2020. This decline thus partially offset some relative falls in gross collections. As discussed in detail in Section 4, high levels of VAT refunds are not necessarily a bad thing – if refunds are legitimate, then a good refund system with timely repayment of credits is a crucial part of a functioning VAT system – and the payment of legitimate refunds should not be a means of achieving net revenue goals. Of course, refunds can also be subject to abuse, and the aggregate series here does not shed any light on the drivers of aggregate refund payments.

By international standards, Ghana's VAT and levy revenue is low relative to overall output. At 3.4% of GDP in 2019, only six countries out of 30 in Africa with available data had lower revenue (see Figure 5.4) Ghana's return of 3.6% in 2021 only increases its ranking by one. This is in spite of the high headline rate in Ghana once the various levies are included, as shown in Section 3. If only focusing on VAT alone, only five countries had lower revenue relative to GDP in 2019. Among countries with lower VAT-to-GDP ratios are substantially poorer countries such as Chad and the Democratic Republic of the Congo (DRC). Many countries with comparable income levels, and much poorer countries in the region such as Togo and Burkina Faso, collect more relative to national output.

## Figure 5.4. VAT-to-GDP ratios in African countries, 2019




Note: Net VAT figures for Ghana subtract VAT refunds and include the associated levies. There may be some differences in how figures are constructed for other countries in the sample. Regional averages are based on the unweighted average of countries in the database. VFRS data are not included as similar schemes in other countries are not reported as part of net VAT revenues. LAC comprises 23 countries from the Caribbean, Central America and South America.

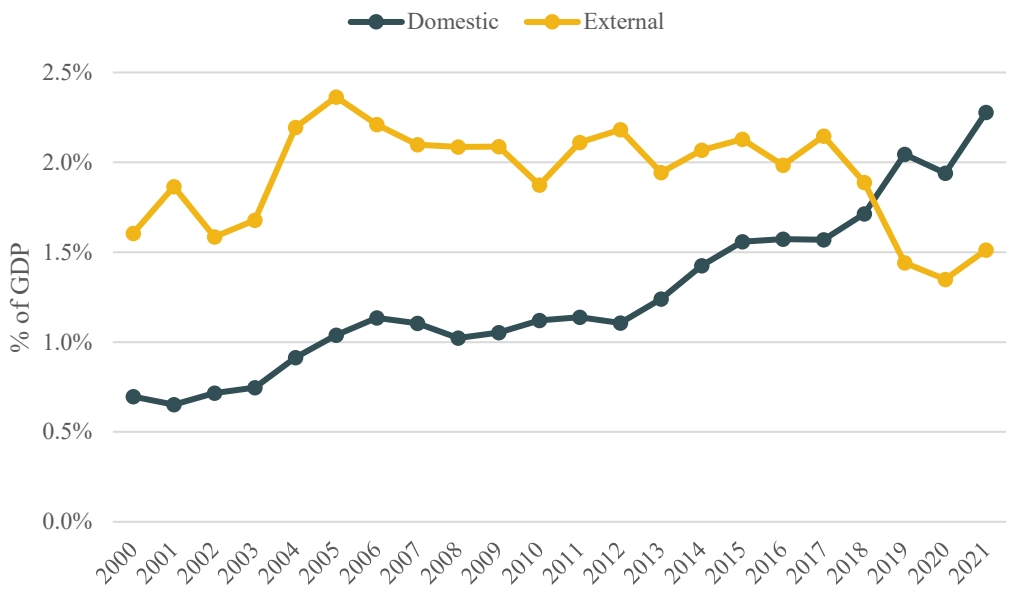
Source: OECD Global Revenue Statistics Database, Ghana Revenue Authority and Ghana Statistical Service.

## Domestic and external collection

The collection of VAT and levy revenues on imported (or external) and domestic sales are separately administered and accounted for: the former by the Customs Division of the GRA, and the latter by the Domestic Tax Revenue Division. Figure 5.5 shows the evolution of these two streams of revenue for VAT and the levies as a share of GDP over time. Historically, collections on imported goods dominated overall revenues in Ghana – up until 2012, total

external collections usually amounted to more than double those collected domestically. This is consistent with border controls facilitating stronger VAT compliance – a pattern documented consistently across countries with different levels of import penetration (Morrow, Smart and Swistak, 2022). Given that commodity imports as a share of GDP did not change substantially throughout this period either – ranging between 20% and 25% of GDP (Abrokwah et al., 2021) – it is perhaps unsurprising that revenues from external collection did not change substantially as a share of GDP between the mid-2000s and 2017, despite significant economic growth and evidence of some structural change. This may reflect that the administrative processes for collecting VAT and levy revenue on imports did not need to change much over the period either. In contrast, domestic collections increased much more substantially over the same period, from 0.7% of GDP in 2000 to 1.6% in 2017.

**Figure 5.5. Domestic and external VAT and levy tax collections, 2000–2021**




Note: Figure shows gross collections only, summing standard VAT, NHIL, GETFL and CHL.

Source: Ghana Revenue Authority and Ghana Statistical Service.

Recent years have seen further large changes in the relative contributions of import and domestic VAT and levy collections, including a notable inversion of the historical dominance of external collections. From 2017 to 2021, external collections fell from 2.1% of GDP to 1.5%, while domestic collections rose from 1.6% to 2.3%. There may be various factors at play here, but two particular considerations of note are the benchmark values discount policy reform implemented at Customs in 2019, and the impact of the COVID-19 pandemic on trade

flows.[47] The former substantially reduced the assessed value of imports, and, as shown in Abrokwah et al. (2021), reduced the import tax base and overall tax revenue collected at the border by perhaps GHS 3 billion in 2019 alone, though some of this loss will be offset by reduced input VAT deductions by domestic VAT taxpayers. The effect of the pandemic on trade flows is also highlighted in the same report: the (assessed) value of imports fell below 10% of GDP in 2020, further suppressing the tax base for import taxes.

## Taxpayers and tax offices

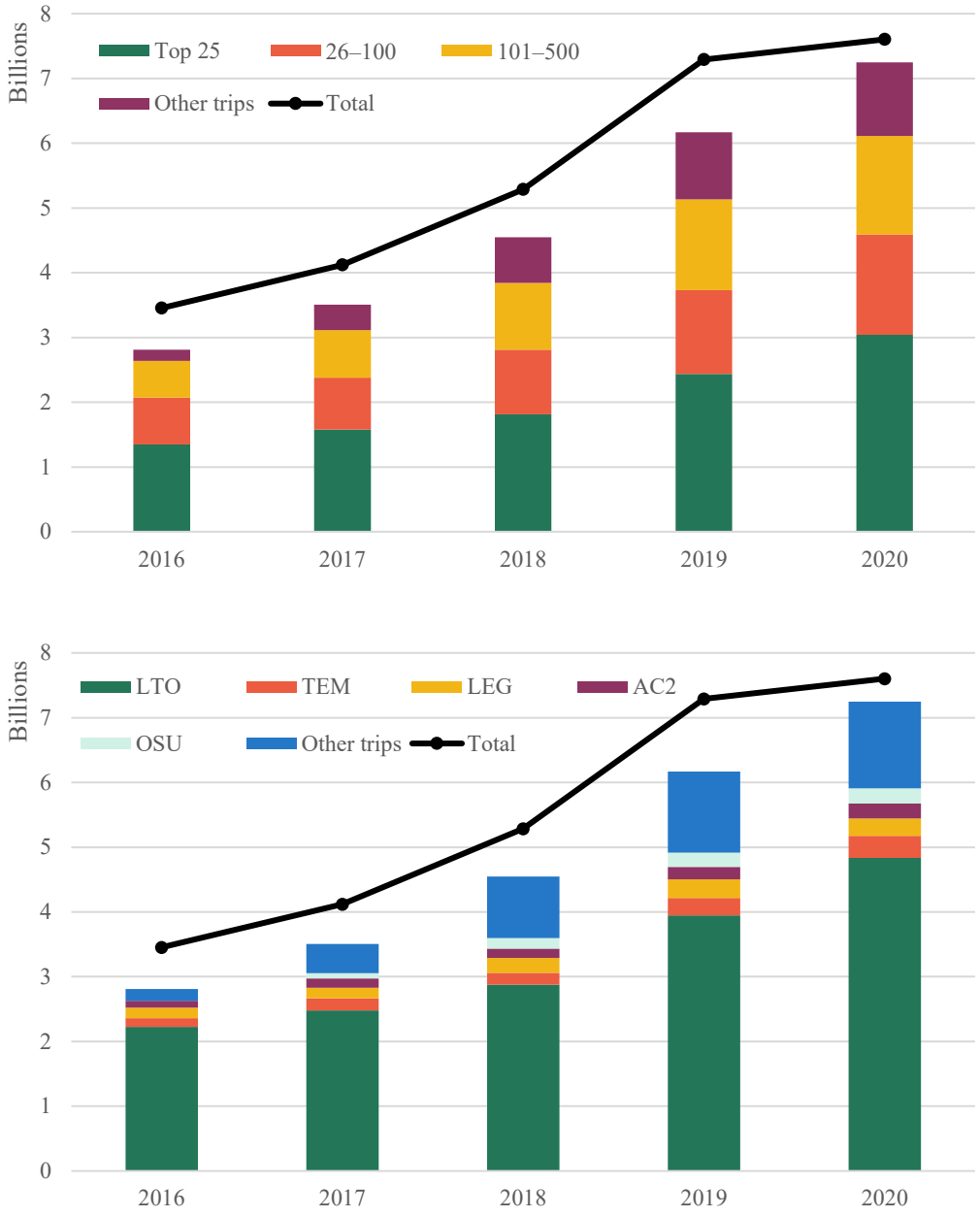
Administrative tax payment data from trips™ allow us to study in more detail the composition of domestic VAT and levies revenues. As discussed, the payments recorded in trips™ do not cover 100% of revenue but they do account for the vast majority, at least from 2016.

Figure 5.6 shows that domestic VAT and levies revenues are concentrated along two dimensions. First, a small number of taxpayers account for a large share of total revenue remitted. The top 25 largest contributors of VAT and levy revenue accounted for more than GHS 3 billion in 2020, or around 40% of domestic collections. In 2016 this same figure was 39%, and in 2018 it was 34%. The top 500 taxpayers accounted for 76% of revenue in 2016, 73% in 2018 and 80% in 2020. This indicates that there has not been a significant trend towards broadening where tax revenue is collected from.[48] This concentration of revenue collections is also clear at the tax office level. In particular, the LTO accounts for the majority of revenues in Ghana. In 2020 it collected 64% of domestic VAT and levy revenue – the same share as in 2016. Tema, Legon and Osu in the Greater Accra region were, prior to recent reorganisation of tax offices, some of the next biggest tax offices in terms of revenue collections.

[47] The benchmark values discount policy was introduced in April 2019 and reduced the assessed value on which import taxes are applied by up to 50% and 30% for general goods and vehicles, respectively.

[48] The year 2020 is the last full year for which we have administrative data. It may be that the nature of economic conditions in that year drove a greater degree of concentration in revenue collections.

## Figure 5.6. Composition of tax payments in trips™ by taxpayer size (top) and tax office (bottom)



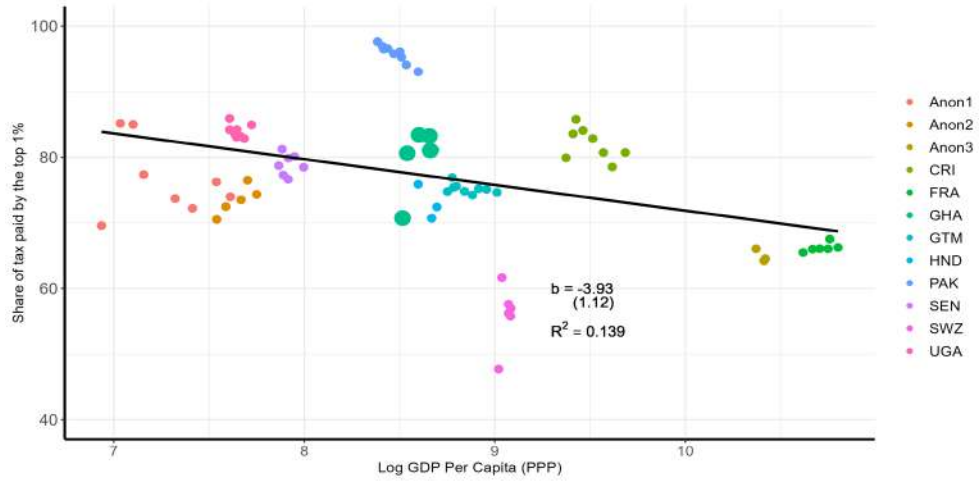

Note: Payment years may not align with the year the liability was generated for. Data underlying these figures comprise all businesses observed making any payment for VAT, VFRS, NHIL or GETFL in each year, with the totals for each summed for each firm. The total series represents gross collections reported by the GRA, including revenue outside of trips™.

Source: Ghana Revenue Authority.

While this degree of concentration and its consistency may appear striking, it should be noted that Ghana is far from unique in this respect. Around the world, governments collect a large

share of total tax revenue from a small number of businesses. Figure 5.7 shows the share of total domestic VAT liability accounted for by the largest 1% of taxpayers in each year for a range of countries. Ghana had just over 40,000 VAT taxpayers in 2020, and thus these figures are roughly comparable to the share of revenue accounted for by the top 500 taxpayers in Ghana.[49] The figure shows that the top 1% of VAT taxpayers account for a very large share of liabilities across countries at different levels of development. With some exceptions, this share often ranges between 70% and 90%, and Ghana's level of revenue concentration is similar to other African countries. The downward slope of the fitted line indicates that as average incomes rise, this share tends to decrease. However, the correlation is relatively weak, and concentration is still clear in the richest country in the sample (France), where around two-thirds of VAT liability is still generated in the largest 1% of businesses.

### Figure 5.7. VAT liability concentration in countries by income level




Note: Figure shows the share of total domestic VAT liability accounted for by the largest 1% of businesses as measured by sales reported in administrative VAT data. Each dot shows an estimate of this concentration of liability for a given year, and each colour indicates a given country. Three countries are currently anonymised for disclosure reasons. Ghana is represented by the large green dots.

Source: Brockmeyer et al. (2024).

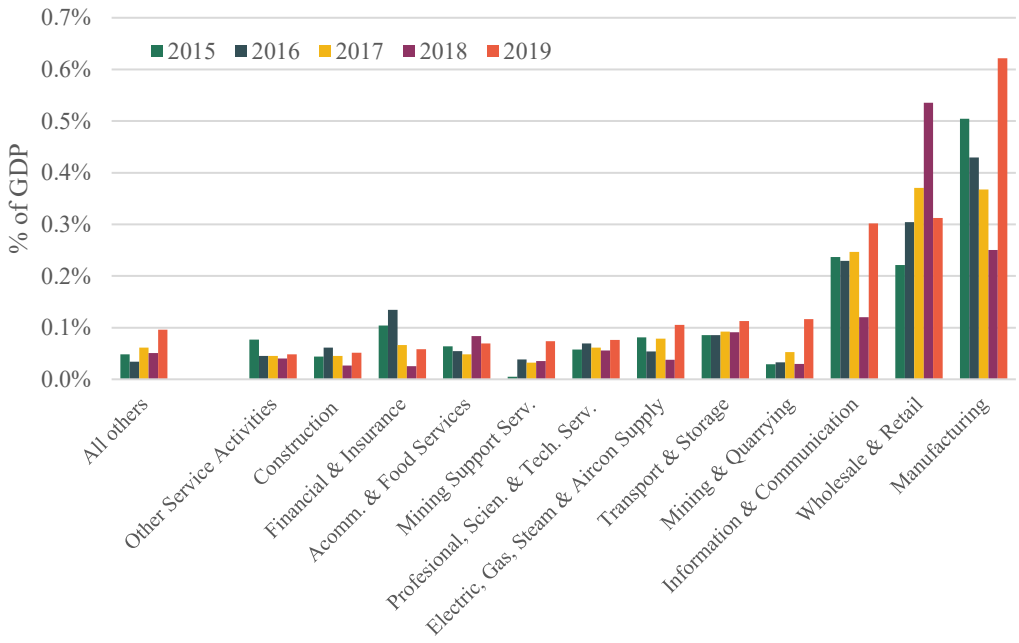
## Sectors

Finally, Figure 5.8 shows the contribution of different industrial sectors to VAT and levy revenue based on data from GRA. These data cover domestic collections of VAT, NHIL and

[49] The figures are still not directly comparable, however, as the figures presented for Ghana are based on the largest taxpayers as ranked by their tax payment, rather than their reported sales.

GETFL, and reveal some notable patterns. In most years, manufacturing is the largest contributor to domestic revenue. However, the sector witnessed declining collections from 2015 to 2018, decreasing from 0.5% to 0.25% of GDP, before a substantial rebound to above 0.6% in 2019. In contrast, the wholesale and retail sector – which is usually the second largest contributor to revenue – exhibits exactly the opposite trends. Collections increased rapidly from 2015 to 2018 such that the sector even overtook manufacturing, but then declined back to 2016 levels in 2019, which was the first full year of the new VFRS. While the changes in these two sectors are the most important for overall revenue, other trends include some recent increases in VAT revenues from mining, quarrying and related companies, and relative decreases in finance and insurance.

### Figure 5.8. Sectoral composition of domestic revenues, 2015–2019




Note: Figure shows domestic collections (not accounting for refunds) by sector, for total of VAT, NHIL and GETFL.

Source: Ghana Revenue Authority and Ghana Statistical Service.

# The VAT gap

One way of understanding the revenue performance of a tax system or a specific tax type is to use tax gap analysis.

A baseline measure of aggregate VAT revenue performance which is both popular and easy to compute is known as 'C-efficiency'. This measures actual VAT revenues relative to

potential VAT revenues in a perfectly enforced, uniform system where the standard rate applies to all consumption. More formally:

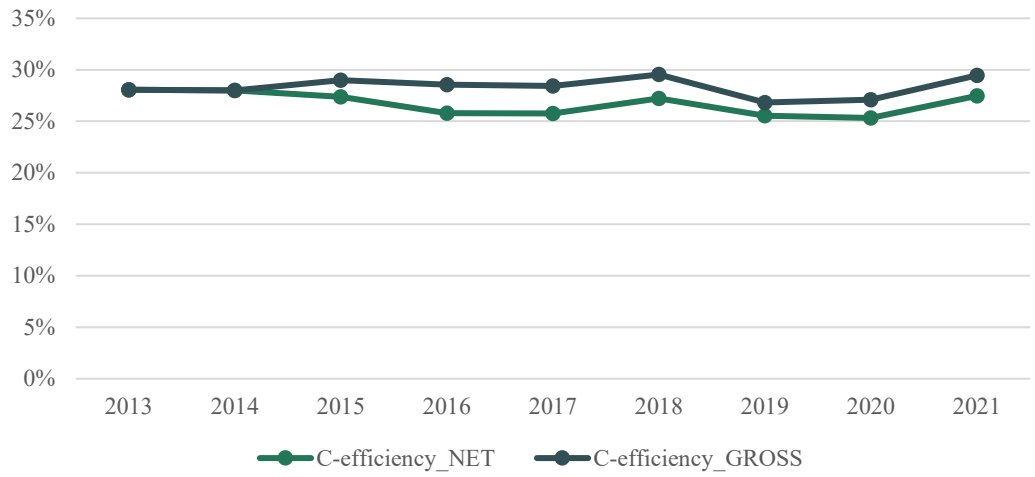
$$C = \frac{Revenue}{Standard\ Rate \times Consumption}.$$

Clearly, this is a simple measure, and does not allow one to decompose the role of policy versus compliance drivers. Nonetheless, it provides a useful benchmark that is more informative than using revenue as a share of GDP, since consumption is the tax base for VAT. In contrast, differences in the composition of GDP across countries, and within countries over time (as discussed earlier), mean a focus on VAT-to-GDP ratios alone can give a misleading impression about revenue performance.

A low C-efficiency ratio can be interpreted as an indication of weak VAT system design (often characterised by exemptions and/or reduced rates) and/or weak enforcement (characterised by high levels of non-compliance). However, C-efficiency scores can also be distorted upwards when policy design deviates away from only taxing final consumption: for instance, because breaks in the VAT chain mean that intermediate consumption is subject to taxation, or because net VAT credits are not fully refunded. That there may be deviations in both directions for a given country also cannot be unpicked with this aggregate measure.

Because C-efficiency is a measure designed to compare VAT as a consumption tax across countries, in what follows we only include standard VAT revenues, measured in terms of gross and net VAT collections (i.e., gross collections minus refunds). Figure 5.9 shows estimates of Ghana's C-efficiency score over time, using household final consumption expenditure as the potential VAT base. The estimates based on net VAT collections show a relatively stable score between 0.25 and 0.28 between 2013 and 2021; these are slightly higher when gross collections are used, however. Overall, the observed trends imply that Ghana's overall VAT gap has changed little in the last decade or so. The lowest scores for this metric were, however, recorded in 2019 and 2020.

## Figure 5.9. C-efficiency in Ghana over time




Note: Calculated as VAT revenues as a percentage of potential VAT revenues; the latter is calculated as the standard rate of VAT multiplied by household final consumption expenditure. Prior to 2015 VAT revenues are in gross terms; thereafter refunds are subtracted from gross revenues.

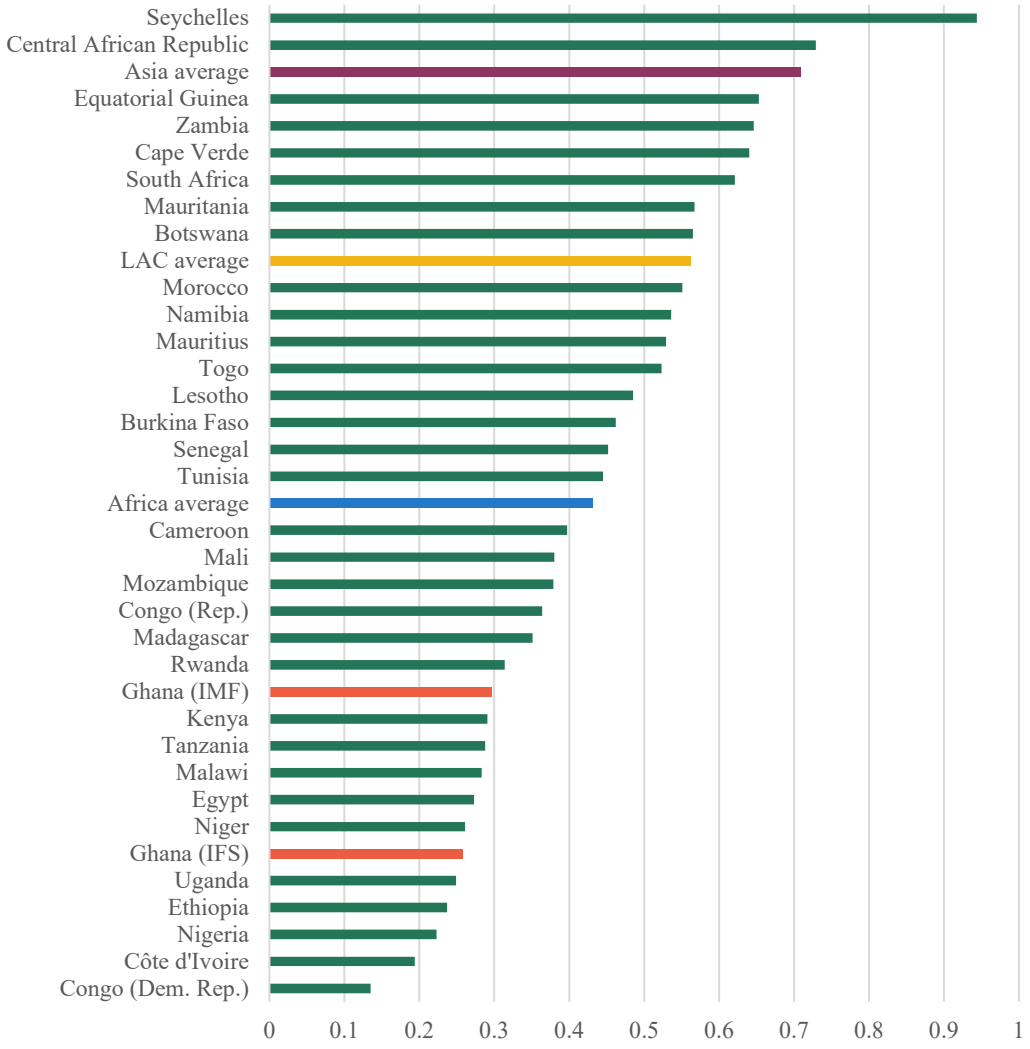
Source: Ghana Statistical Service and Ghana Revenue Authority.

As with comparisons of the VAT-to-GDP ratio shown earlier, international comparisons of C-efficiency suggest that the revenue productivity of Ghana's system is quite low. For instance, the estimate for 2017 shown above places Ghana 28th out of 33 countries in Africa with available data, and it is significantly below the African average of 0.43.[50] Average C-efficiency scores in Asia and Latin America and the Caribbean are significantly higher than those in Africa again (Figure 5.10).

While the C-efficiency score provides an aggregate measure of the performance of the VAT system, it nonetheless falls short of revealing the sources of VAT gaps; that is, whether such gaps are arising from policy considerations (due to the presence of exemptions and reduced rates) or compliance challenges (due to evasion or the pervasiveness of informal transactions). Providing such evidence requires national accounts data and disaggregated VAT collections and refund data. A detailed analysis of Ghana's VAT gap has not been possible during the time available to produce this report, but this analysis will be conducted and published as an addendum in future.

[50] The underlying data used in Figure 5.10 include an estimate for Ghana that is slightly higher than our own calculation. This may be due to updates in macroeconomic aggregates over time, or small differences in the revenue data provided, for instance. Both estimates are included for completeness.

### Figure 5.10. C-efficiency in African countries, 2017




Note: Regional averages calculated as unweighted means for countries with available data. Asia comprises 16 countries from Central, Eastern, Southern, South-East and Western Asia. LAC comprises 23 countries from the Caribbean, Central America and South America.

Source: IMF Tax Policy Assessment Framework, https://www.imf.org/en/Data/TPAF (click on VAT > Performance > VAT effectiveness > C-efficiency).

# Drivers of revenue

In recent years, Ghana's revenue collections from VAT and levies have not increased relative to national output in general, aside from an uptick in 2021, despite significant focus on this area of taxation and a number of policy reforms, some of which were intended to raise

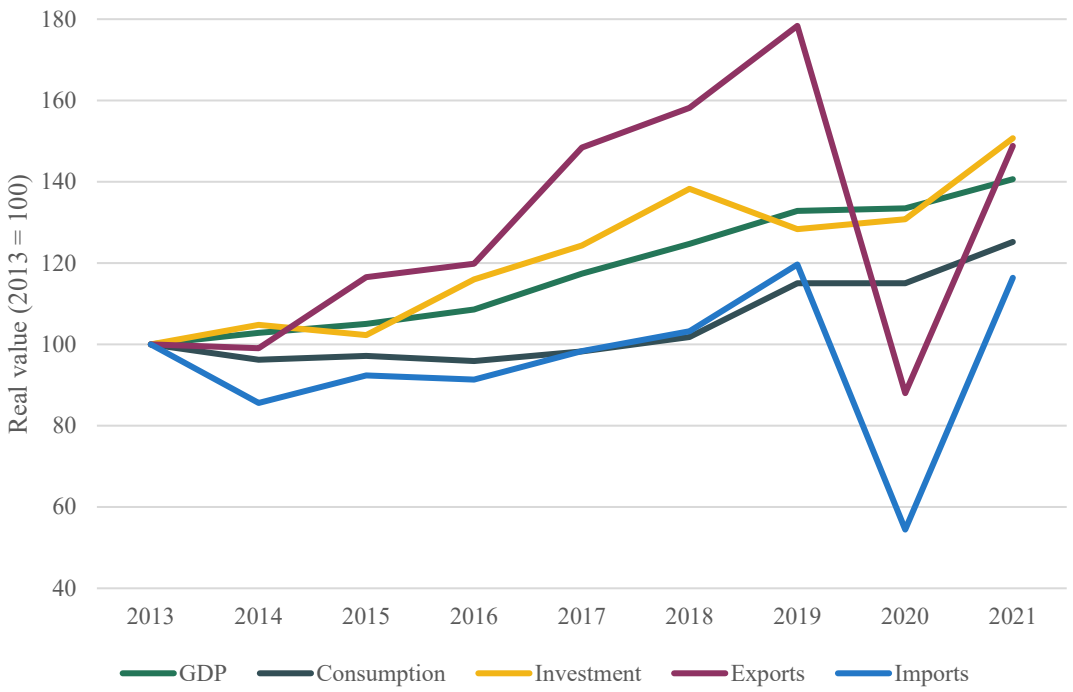
revenues. In this section, we pay particular attention to the key drivers of revenue to shed light on the role of different factors in the aggregate trends seen in recent years. While we are not able to fully account for all revenue trends, nor necessarily evaluate the revenue impact of specific policy changes or initiatives, we offer descriptive evidence on a number of relevant margins.

## Economic factors

As discussed, VAT as a share of GDP did not increase from 2015 to 2020. However, it is important to note firstly that some recent macroeconomic shifts have not been conducive to increases in this measure of VAT revenue performance. For instance, consumption growth in Ghana has been comparatively weak. In fact, Figure 5.11 shows that between 2013 and 2017, real consumption growth was negative, while real GDP grew by more than 17%, according to data from the Ghana Statistical Service. From 2013 to 2021, household final consumption expenditure grew 25% in real terms, while GDP grew by more than 40%.

In contrast, both exports and investments grew particularly quickly in the same period. From 2013 to 2021, investment and exports both grew by around 50%, and thus both notably increased their GDP shares. Neither should, in principle, provide a source of VAT revenue. Imports, on the other hand, grew more slowly and across 2014–2019 were smaller relative to other GDP components than previously. Existing evidence suggests that the withholding mechanism of VAT collected at the border is an important determinant of VAT revenues, especially in developing countries (Morrow, Smart and Swistak, 2022).

**Figure 5.11. Relative growth of components of real GDP and real GDP (2013 = 100)**

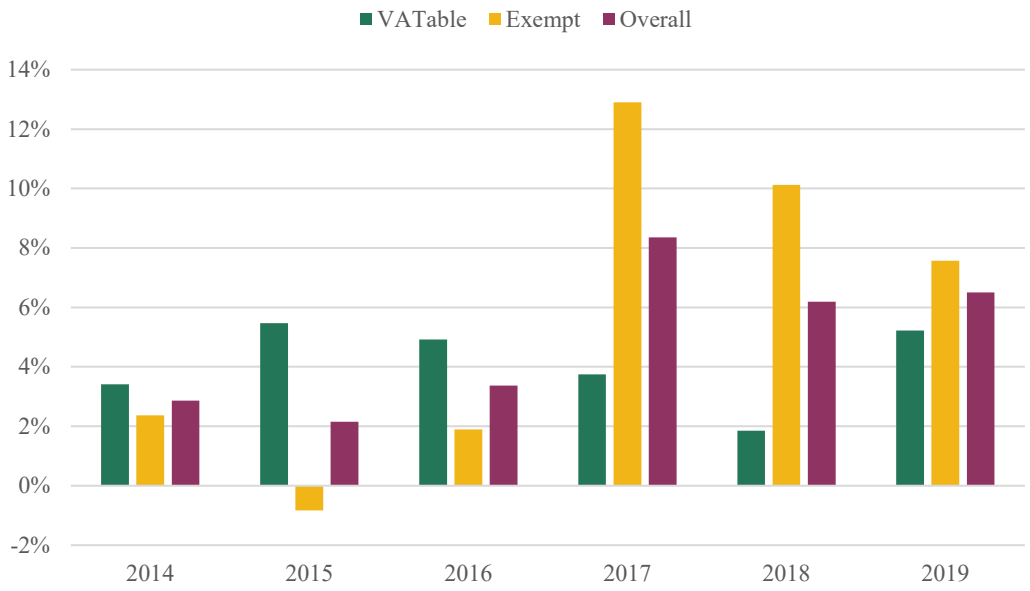



Source: Ghana Statistical Service April 2022 GDP by Expenditure. https://www.statsghana.gov.gh/nationalaccount_macros.php?Stats=MzE2Njk3MDQ0LjUxOA==/webstats/q4q76srp20

Thus, changes in GDP composition have not been conducive to higher VAT revenues as a share of GDP. However, C-efficiency has also remained low, so VAT revenue performance is not just related to GDP components outside of consumption. Another macroeconomic factor could be the role of structural economic changes interacting with the tax system. As shown in Figure 5.12 using an approximation of sectoral VAT eligibility, some of the fastest-growing sectors in Ghana are not likely to contribute large amounts of VAT due to the goods and services they produce being largely VAT exempt. For instance, mining and quarrying increased its GDP share from 12% in 2016 to 18% in 2019, significantly due to oil.

Since 2020, global economic shocks have created headwinds to the revenue performance of VAT and levies in Ghana. As Figure 5.11 shows clearly, imports were adversely affected by the COVID-19 pandemic in 2020, further suppressing the potential for revenues to be collected at Customs. While sectoral revenue data for 2020 were not available for this project, it seems likely that some domestic sectors also suffered due to measures that restricted tourism and large gatherings, for instance.

## Figure 5.12. Annual output growth rates of VATable and VAT-exempt sectors




Note: Exempt sectors are crops, livestock, forestry and logging, fishing, mining and quarrying, electricity, water and sewerage, transport, public administration, education, and health and social work. Output valued at basic 2013 prices.

Source: Ghana Statistical Service GDP Expenditure 2013–2019 April 2020 Edition. https://www.statsghana.gov.gh/nationalaccount_macros.php?Stats=MzE2Njk3MDQ0LjUxOA==/webstats/q4q76srp20

We conclude this discussion with a cautionary note on macroeconomic aggregates that may be relevant for evaluating changes in revenue performance over time and across countries. In this report we usually evaluate revenues as a share of national output or some other macroeconomic aggregate so that outturns are evaluated relative to the size of the economy. However, recent academic evidence has raised new questions about how well GDP is reported in official statistics in a wide range of countries by comparing stated growth figures to that predicted by observable economic activity measured from satellite imagery of night-lights (Martinez, 2022). This research suggests that Ghana's GDP growth may be overstated by approximately 20 percentage points from 2002 to 2021, and this would presumably apply to macroeconomic aggregates like consumption too.[51] If true, this might suggest that the true VAT-to-GDP ratio is higher than currently estimated in Ghana. Crucially, though, it would not explain Ghana's low ranking when compared with other African countries, as the same

[51] See: https://www.economist.com/graphic-detail/2022/09/29/a-study-of-lights-at-night-suggests-dictators-lie-about-economic-growth.

evidence points towards GDP being overestimated in many African countries – and often by more than in Ghana.

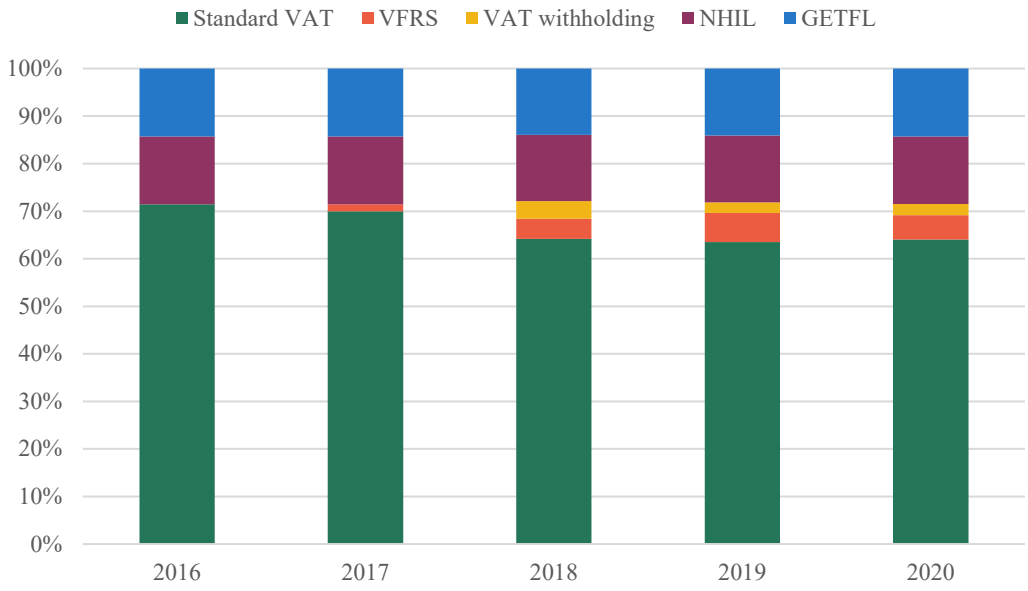
## Policy

A second set of factors that may have been material for VAT and levy revenue in Ghana in recent years relate to substantial policy reforms. Below we discuss the potential impact of three major tax policy reforms: the introduction of the VFRS for wholesalers and retailers in 2017, the conversion of the NHIL and establishment of the GETFL into non-reclaimable levies in 2018, and the introduction of the discount policy reform for imports in 2019.

### The VFRS (2017)

As discussed in detail in Section 3, the VFRS was introduced in May 2017 for businesses in the retail and wholesale sector. Until 2022, there was no maximum size threshold for businesses in the VFRS. Since its introduction, VFRS revenues have accounted for a relatively small share of those generated as part of the domestic VAT and levies system (Figure 5.13). VFRS payments made up 4% of total domestic VAT and levy collections in 2018, 6% in 2019 and 5% in 2020.

**Figure 5.13. Composition of domestic VAT revenues, 2016–2020**




Note: Figure uses data on revenues before year-end reconciliation provided by the GRA, such that raw values do not exactly match aggregate series in all years.

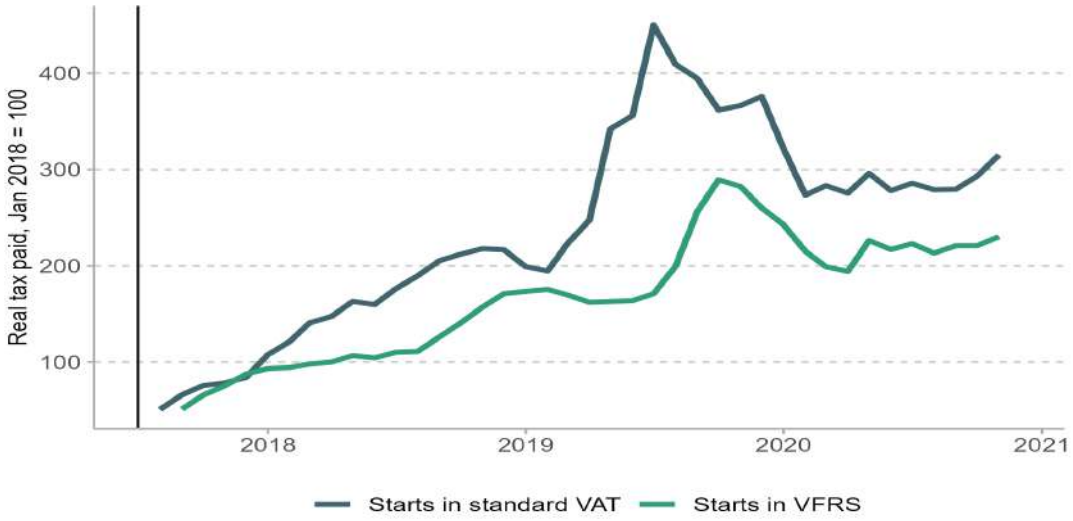
Source: Ghana Revenue Authority.

Whether the scheme had positive or negative revenue effects depends on weighing up two main considerations. First, it depends on whether the VFRS encouraged some businesses to enter the tax net that would not have entered in the absence of the scheme. Second, it depends on whether aggregate revenue collections from businesses that use the VFRS are higher or lower than if those same businesses had been on the standard VAT scheme. On average, one-third of revenue in the VFRS comes from businesses not previously recorded as paying the standard VAT, and two-thirds comes from businesses that were previously recorded as paying the standard VAT.

To address the first channel, we compare the growth of revenue from new businesses that entered the VFRS against the growth of revenue from businesses that entered the standard VAT after the introduction of the VFRS in July 2017. If the VFRS was successful at attracting new businesses into the tax net, due to its simplicity and low rate, one could expect that the number of new businesses in the VFRS, and the revenue collected from them, would grow faster than the number of new businesses and associated revenue in the standard VAT scheme. This would be the case if the underlying creation and growth of businesses eligible for the VFRS and standard VAT schemes was the same, and that they would have registered for the standard VAT at the same rate if the VFRS did not exist. If underlying growth dynamics and registration behaviour differ for these two groups of businesses, a simple comparison of revenue trends between VFRS and standard VAT taxpayers is not sufficient to draw conclusions on the causal impact of the VFRS on revenue.

Bearing this caveat in mind, Figure 5.14 presents the real tax paid among businesses that started in the standard VAT against businesses that started in the VFRS, rebased so that January 2018 = 100. Revenue growth among businesses that joined the standard rate scheme was greater than among businesses that joined the VFRS. Between January 2018 and the end of 2020, revenue among businesses that started in the standard VAT after July 2017 grew by a factor of 3.1, compared to a factor of 2.2 among businesses that started in the VFRS, and this differential was more pronounced in 2019. The standard VAT and VFRS also attracted a similar number of businesses – about 6,000 – during this period. This means we cannot detect a positive effect of the VFRS on registration of, and revenues from, new taxpayers, suggesting it was not particularly effective at increasing the total number of businesses in the tax net. We cannot be sure of this, though – businesses joining the VFRS might have been less likely than others to join the standard VAT scheme and grown slower than other businesses if the VFRS did not exist.

**Figure 5.14. Real tax paid among businesses which entered the tax net after the introduction of the VFRS, in the standard scheme and VFRS, Jan 2018 = 100**

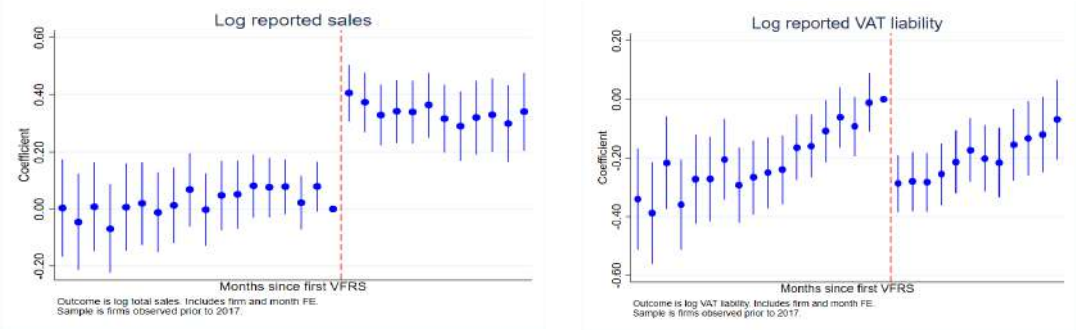



Notes: Tax paid from standard scheme businesses includes the standard VAT, NHIL and GETFL after August 2018. A firm is classed as 'entering the tax net' after the introduction of the VFRS if its first entry in the payments data is on or after July 2017. The 'starts in standard VAT series' consists of businesses who first make a tax payment under the standard VAT scheme, and likewise for the 'starts in VFRS' series. Businesses are classed into the standard VAT or VFRS based on the scheme to which they first make a tax payment. As discussed below, switching and dual-filing are common, and these types of businesses are not mutually exclusive. The figure shows the real total tax paid, in GHS, in the two schemes, rebased so that January 2018 = 100, and calculated on a 3-month moving average.

Source: Authors' calculation using data from trips™.

The second channel by which the VFRS could affect aggregate revenue is by businesses switching from the standard VAT to the VFRS. The VFRS rate (3% before 2021) is much lower than the effective rate of the standard VAT and levies paid on sales of 14%, but businesses may respond to the lower VAT rate by increasing reported sales (either via increased real activity or reduced evasion). The left-hand panel in Figure 5.15 presents the effect of switching to the VFRS on reported sales, in the months after the first VFRS declaration. It shows that in the month after the first VFRS declaration, businesses report 40% higher sales than they did when they were in the standard VAT scheme. The right-hand is log reported VAT liability – it shows that, conditional of having a positive VAT liability, switching to the VFRS is associated with a 30% lower tax liability, suggesting the higher reported sales do not offset the fall in the effective tax rate.

## Figure 5.15. Event studies for businesses switching into the VFRS from standard VAT




Note: Figures show monthly regression coefficients for standard VAT businesses; the dashed red line indicates entry into the VFRS. The sample includes an unbalanced panel of businesses which are observed submitting standard VAT returns prior to 2017. All regressions control for firm fixed effects (FE), and 95% confidence intervals based on robust standard errors are shown. Outcomes are conditional on reporting positive sales (left-hand panel) and a positive tax liability (right-hand panel).

Source: Authors' calculation using data from trips™.

These numbers are unlikely to be the overall effect of the VFRS, due to the fact that switching to the VFRS is not a one-off event for many businesses, and many businesses will switch back to the standard VAT after entering the VFRS. As discussed in Section 3, many businesses seem to be simultaneously filing for the VFRS and standard VAT at the same time, and many businesses switch back and forth between the VFRS and standard VAT. These businesses may be strategically splitting tax liabilities between the standard VAT and the VFRS, or they may be switching for other reasons. As in Section 3, we can define five types of firm-month observations:

- 'Permanent switch to VFRS' are payments made by businesses that were in the standard VAT before July 2017, switched to VFRS and are never observed switching back.
- 'Dual-filers' are payments made by businesses that are observed paying tax under both the standard VAT and VFRS in the same month.
- 'Temporarily in the VFRS' are payments made by that were in the standard VAT before July 2017, switched to VFRS, but are observed switching back at some point.
- 'Temporarily in standard' are payments made by businesses that were in the standard VAT before July 2017, but at some point, after the introduction of the VFRS will make a temporary switch into the VFRS, or start dual-filing.
- 'Permanently in standard' are all payments made by businesses before the introduction of the VFRS, and businesses which stay in the standard scheme after the introduction of the VFRS.

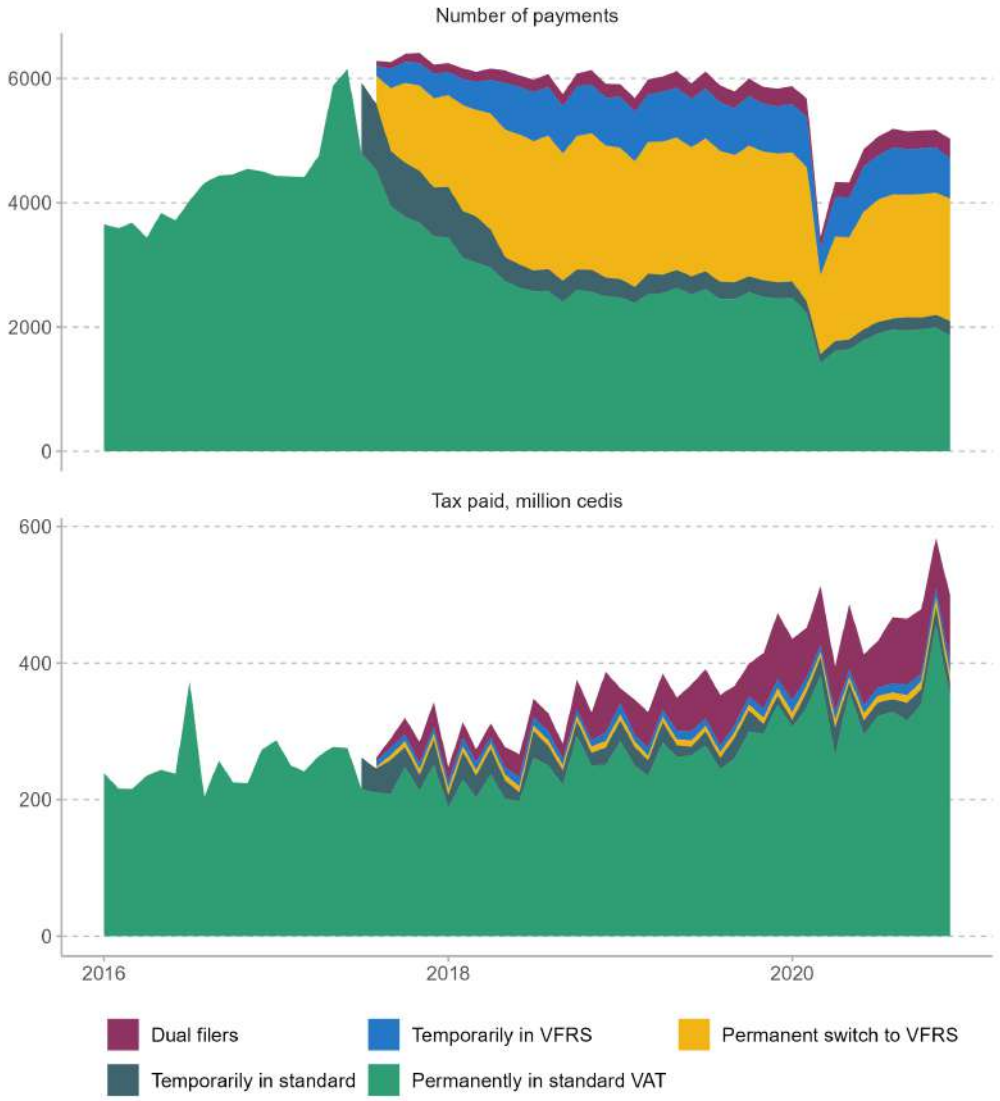
Note that a firm can change which group it is in during the sample period, as the group is assigned to a specific firm-month observation.

Figure 5.16 shows the number of tax payments by each category (top panel) and the tax paid by each category (bottom panel). Before the introduction of the VFRS, all businesses and all payments were in the 'permanently in standard' category. After the introduction of the VFRS, there are a large number of businesses that permanently switch into the VFRS (the yellow area), averaging around 2,000 payments per month after the introduction of the VFRS. The revenue contribution of these businesses is relatively small, averaging GHS 8–10 million per month.

On the other hand, a relatively small number of businesses are 'dual-filers' but contribute GHS 50–100 million per month (the purple area). Before the introduction of the VFRS, there were on average 3,500–4,500 tax payments per month. After the introduction of the VFRS, there were on average 6,000 tax payments per month. As only businesses that were present before the introduction of the VFRS are included in this analysis, this suggests that the VFRS is associated with an increase in filing frequency. This is expected as VFRS is intended to be simpler, and does not allow for negative tax liabilities.

One simple way to start to consider the revenue impact of the VFRS is to look at the average tax payment from each group in a given month, in comparison to the 'permanently in standard VAT' group. Given that VFRS taxpayers are generally smaller than standard VAT taxpayers, simply comparing the average tax paid in the VFRS and the average tax paid in the standard VAT is unfair. To identify the true effect of the VFRS on tax revenue, we use a fixed-effects regression. This looks at the effect of dual-filing, temporary switching and permanent switching on a firm's tax liability, compared to the average of the firm's tax liability in the entire sample period. This effectively controls for the fact that businesses that switch into the VFRS have a different average size, or are in a different industry, which may also be correlated with their tax liability.

## Figure 5.16. Number of tax payments and tax paid by each category of VFRS firms




Note: See text for definition of categories. Tax paid is in nominal terms, and deliberately excludes businesses that are permanently in standard VAT. All conditional on being observed in trips™ before July 2017. Tax paid under standard VAT includes VAT, NHIL and GETFL payments. Tax paid is at a monthly level.

Source: Authors' calculations using trips™ payments data.

Full results are in Table A.2 in the Appendix. In general, businesses dual-filing, temporarily in the VFRS, or permanently in the VFRS make a 1.7% lower monthly tax payment than

when they were in the standard VAT (column 1). This masks substantial difference between different 'types' of businesses. As column 2 shows, permanently switching into the VFRS is associated with a 4.3% drop in monthly tax liability. Temporarily switching into the VFRS is associated with an even larger 12.0% drop in tax liability compared to the firm's average history in the standard VAT, but this is partially offset by the fact that these same switching businesses, when they are temporarily in the standard VAT, have a 4.8% larger tax liability than their average. One notable outlier is the dual-filers, who have a 57% larger tax liability than when they were permanently in the standard VAT before the introduction of the VFRS, when combining their payments under the standard VAT and VFRS returns.

As shown in Figure 5.16 and column 3 in Table A.2, the VFRS is also associated with increased filing rates. This may skew the results outlined in the previous paragraph, if businesses in the VFRS file more regularly, but with smaller average monthly tax payments. One crude way to adjust for this is to multiply the monthly tax payment by the number of returns the firm files a year, to get an 'annual equivalent' tax liability. This adjustment does not change the results substantially (column 4).

Overall, this analysis suggests that the VFRS is associated with a negative revenue impact, but one that may not be as large as would be expected given how much lower the tax rate is compared to the standard rate. However, the fixed-effects analysis in particular is subject to several caveats. First, the nature of the 'fixed-effects regression' means that it is only possible to account for average firm characteristics when analysing switchers into the VFRS. If businesses switch into the VFRS because the nature of their business fundamentally changes, or because they experience a revenue shock, it would not be accurate to compare tax liabilities after the VFRS to the average for that firm before the introduction of the VFRS. Secondly, due to data constraints, the analysis only covers the period to the end of 2020, which may not pick up any long-term costs or benefits to the wider economy.

### The NHIL and GETFL levies (2018)

The non-reclaimable nature of the NHIL and GETFL means that they apply to a larger tax base than VAT – all taxable sales rather than only value added. Thus, if businesses and consumers did not change their behaviour, this policy would increase tax revenue, as output continued to be taxed at 17.5% (the combined VAT and levies rate), but inputs could only be reclaimed at 12.5% (the VAT rate). However, as discussed previously, businesses faced with a higher tax burden may respond by reducing actual economic activity, increasing evasion or leaving the VAT altogether, such that the overall impact on revenues is ambiguous.

The NHIL and GETFL have both raised significant amounts of revenue since implementation – together, approximately 1% of GDP in each year 2019–2021. However, the evidence in

Section 3 also showed suggestively that in the immediate aftermath of implementation, businesses did react by becoming less likely to report positive sales, inputs and tax liabilities in their standard VAT returns. Given that overall VAT system revenues did not increase (relative to GDP) in the years after this reform, this raises the question as to what the net revenue effect of this change was.

Understanding this is complicated by a number of factors, including the existence of other tax reforms at the same time and the lack of a control group to provide a revenue counterfactual.[52] As such, the levies are currently analysed using descriptive analysis of aggregate data, before and after the introduction of the levies. Any analysis without a robust counterfactual has to be treated with extreme caution. It could be the case that revenue increased or decreased after the introduction of the levies for other reason(s), such as changes in the macroeconomic environment, or due to similar policy announcements taking place in a similar time-frame (the VFRS was introduced a year before the levies, and VAT withholding was introduced several months before the levy policy change).

Figure 5.17 presents the natural logarithm of real tax payments, from the standard VAT and from NHIL and GETFD. Taking the logarithm strips out the effect of exponential growth, so any change in the trend after August 2018 is a more definite sign of an increase in the growth rate of VAT revenues after August 2018. The analysis is conducted on a balanced panel of businesses (i.e., businesses that were there before and after the introduction of the levies), to exclude the effect of new businesses joining or leaving the sample due to the VFRS (although this also means we cannot pick up whether the levies encourage people to leave the VAT and levies system entirely).[53]

The slope of the line in log billion cedis can be interpreted as the rate of monthly revenue growth. Before introduction of the levies, real revenues grew at an average of 0.7% a month (the green dashed trendline). After the introduction of the levies, real revenue grew at 0.83% a month (the yellow dashed trendline). If revenues continued to grow at 0.7% (the green

[52] Businesses in the VFRS were considered as a counterfactual, as the levies do not apply to businesses in the VFRS. Unfortunately, most businesses only joined the VFRS in late 2017 and early 2018, so it experienced fast revenue growth for VFRS-specific reasons at the time the levies were introduced. In addition, as discussed above, many businesses switch between paying VFRS and standard VAT over time, or pay both in the same period.

[53] The VFRS was introduced a year earlier in July 2017, but most businesses only joined the VFRS in early 2018. High levels of switching to the VFRS, and the VFRS encouraging new businesses to join the standard VAT, may contaminate the before–after analysis of the levies. The balanced panel only includes businesses that were paying standard VAT before and after the levies to minimise contamination from the VFRS.

dashed trendline) after August 2018, total revenues would have been GHS 158 million lower in 2019 and GHS 186 million lower in 2020 (in nominal terms).

The main mechanism by which the levies could raise revenue is by reducing input VAT claims (output tax increases from 17.5% to 18.1% due to VAT applying on top of the levies, whereas purchases can only be reclaimed at a rate of 12.5%, rather than 17.5% previously). Total reported taxable sales and taxable purchases (in the trips™ declaration data) were GHS 41.8 billion and GHS 28.7 billion in 2018, respectively. Increasing the tax rate on sales by 0.6 percentage points and reducing the reclaim rate on inputs by 5 percentage points would result in higher tax revenues of GHS 1.7 billion. This is an upper bound on the amount that could be collected by the levies. The analysis, together with that in Section 3, tentatively suggests that the levies raised considerably less than this, which could be due to businesses reducing real activity or increasing evasion.

If businesses responded to the levies by reducing reported tax liability, we would expect that the effect in Figure 5.17 would be a large jump in collections when the levies were introduced, followed by a gradual decrease in collections as businesses responded. The main reason this is not observed is due to the delayed introduction of the levies – it appears that after August 2018, businesses immediately paid the reduced VAT rate, but did not start filing NHIL/GETFD returns until early 2019 (see Figure A.3 in the Appendix).

This number should still be interpreted with substantial caution. It could simply be the case that revenue growth (or the lack of it) after August 2018 was due to other policies (such as VAT withholding) or to macroeconomic factors. Moreover, even if the observed revenue growth was due to the levies, this analysis only focuses on the short-term effects. In the short-term, it may be that businesses have no other option but to pay the tax. In the long term, businesses may respond to the tax in ways which would reduce or potentially eliminate any revenue effect of the levies.

**Figure 5.17. Log real monthly reported revenues, before and after the introduction of levies, balanced panel**


Note: Calculated on a balanced sample, to exclude businesses which permanently switched from the standard scheme to the VFRS. To be included in the balanced sample, the business must make at least one payment in 2017, 2018 and 2019. Nominal figures are deflated using CPI to 2018. Real value in GHS is smoothed using a 3-month moving average, and the natural log is presented. Trendlines calculated using linear regression.

Source: Authors' calculations using data from trips™.

## The discount policy (2019)

In April 2019, the Government of Ghana introduced a discount policy to the 'benchmark values' of imported goods, reducing the assessed values of imports for customs clearance by 50%, excluding vehicles that were to receive a 30% discount. As documented in Abrokwah et al. (2021), this reform led to an immediate fall in the assessed CIF value of imports processed by GRA's Customs Division, and thus a fall in the tax base for ad valorem taxes. It therefore led to a substantial fall in customs collections: Abrokwah et al. (2021) estimate that these fell by up to GHS 3 billion in 2021 alone.

Prior to 2019, a majority of total VAT and levy revenues were collected at Customs. Thus, this reform is likely to have impacted these collections substantially. Indeed, the sharp reduction in external collections observed in Figure 5.5 in 2019 is highly suggestive that this is the case. To more formally consider this potential effect, in Figure 5.18 we use the same method as in Abrokwah et al. (2021) but restrict the prediction to the sum of VAT, NHIL and GETFL in order to consider the aggregate effect of the discount policy on VAT and levy

collections at Customs.[54] This method generates predictions of the revenue that would have been collected on imports from April 2019 to December 2019 had the reform not been implemented, given the characteristics of imports observed in the GCMS data during that period.

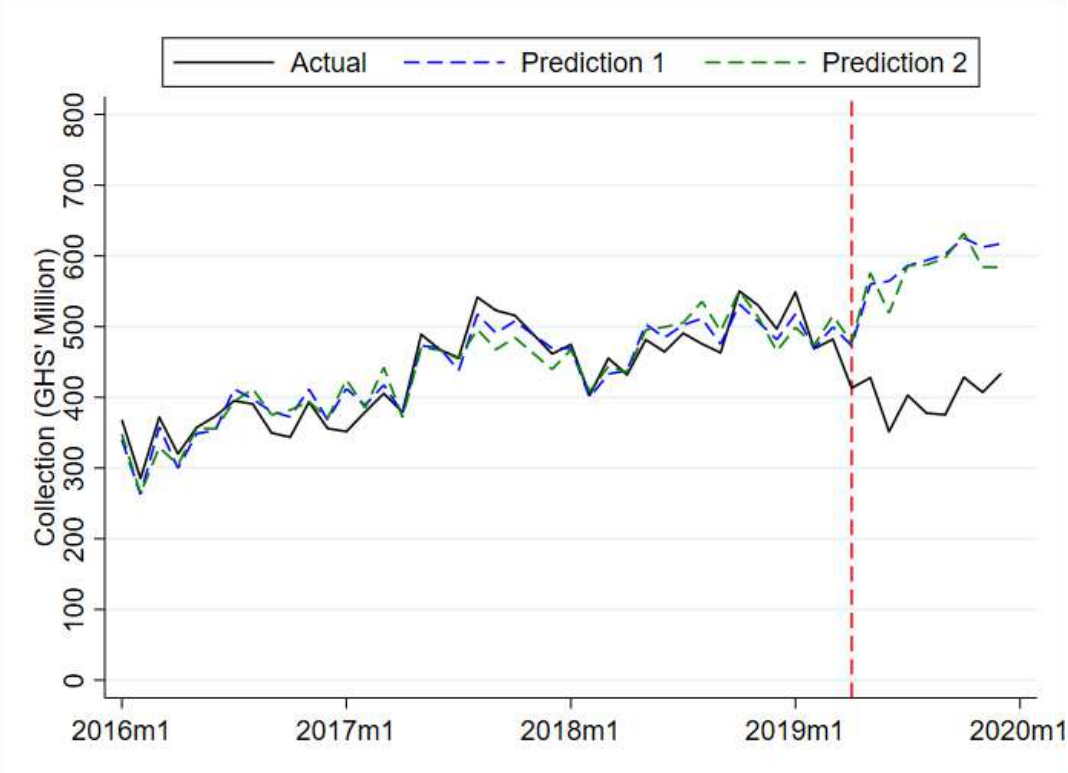
As discussed in the original report, the two methods used for predicting collections below rely on the tax rates applied to imports prior to the April 2019 reform, and assume that in the absence of reform the same goods would have been imported. Thus, this approach should be seen as an upper bound on the aggregate effect since we do not capture that, for instance, importers would be incentivised to buy more because of lower tax rates (in fact, any such behavioural effects *increase* the estimated gap shown below). Nonetheless, the approach shows intuitively how the revenue collected from these taxes at Customs begins to immediately deviate significantly from pre-reform trajectories.

Based on the difference between the actual and predicted series up to the end of 2019, we estimate that the discount policy reform reduced VAT and levy collections at Customs by up to GHS 1.6 billion in 2019 alone – equivalent to nearly a third of total VAT and levy revenues collected at the border in 2019.

This figure in itself should not be taken as the overall effect of the reform on VAT and levy revenues, partly because of the methodological assumptions described above. Most importantly, one would expect that this lower collection of VAT at the border could then feed into higher domestic standard VAT revenues as businesses then reclaim less input VAT in their domestic returns. This reasoning does not apply to the NHIL and GETFL, however, because they are not reclaimable, which means that revenue forgone at the import stage from these taxes is lost entirely.

[54] See Abrokwah et al. (2021) for more information on the methodology used.

## Figure 5.18. The effect of the discount policy on VAT, NHIL and GETFL collections

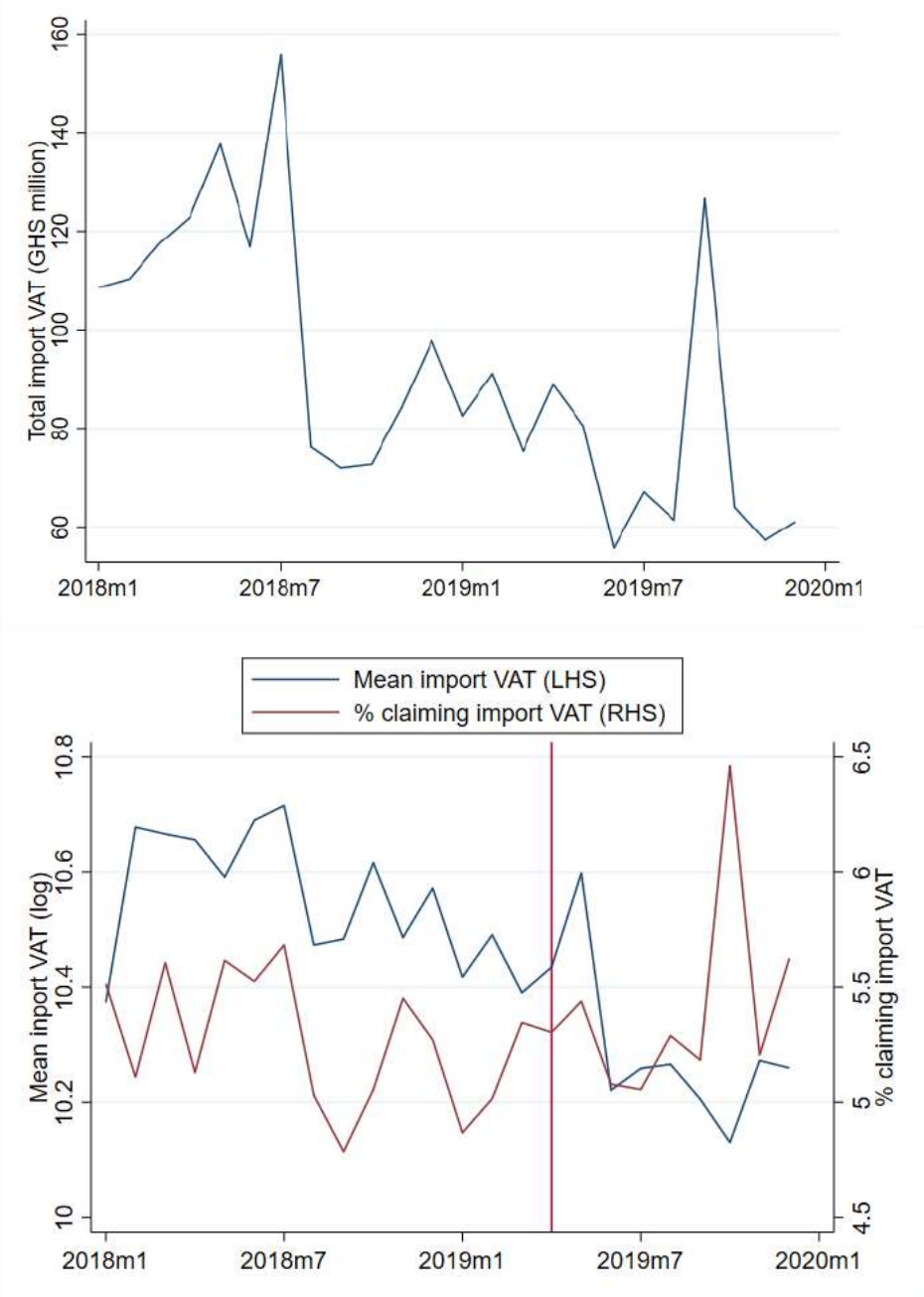



Note: Figure shows actual revenues registered in the GCMS system for VAT, NHIL and GETFL each month, compared to predicted revenues given import characteristics. Predictions are generated using data from prior to April 2019 on the relationship between sales tax collections and import characteristics (excluding CIF, which was also affected by the reform); see Abrokwah et al. (2021) for details.

Source: Authors' calculations using data from GCMS.

However, it seems unlikely that this direct mechanism can offset much of the change in revenue registered at Customs. The top panel in Figure 5.19 shows the aggregate amount of import VAT reported by standard VAT businesses in the trips™ dataset. Although there is perhaps a small drop in the aggregate series around June 2019 of around GHS 20 million per month, even if this were a causal effect it would only offset a small portion of the change in collections at Customs (around one-eighth to one-sixth). As shown in the bottom panel, only a small fraction of businesses report any import VAT in their tax returns; among those that do, the average amount claimed does decrease in the months after the reform, but far from enough to counter the impact in Figure 5.18.

## Figure 5.19. Reported import VAT in domestic VAT returns: aggregate value per month in trips™ (top) and average values for businesses (bottom)




Note: The top graph shows aggregate import VAT reported in tax returns in the data, without any sample restrictions. The bottom graph shows the share of businesses reporting any import VAT and mean (log) import VAT among those businesses that do report import VAT for standard VAT taxpayers observed in the data before 2018.

Source: Authors' calculations using data from trips™.

Overall, it appears that the discount policy had a sizeable impact in reducing VAT revenues collected at Customs in 2019, and likely in 2020 and 2021 too – though estimating these effects is complicated by the impact of COVID-19 in 2020, and changes in the customs data system. While the discount policy may have enhanced revenue collections to some extent via reduced domestic VAT reclaim, and perhaps through broader economic benefits due to lower input costs, for instance, the net effect seems likely to have been significantly negative. This is in line with cross-country evidence that suggests that import VAT is an extremely important collection mechanism in low-income and emerging economies because it is easier to administer and acts as a withholding tax on the informal sector (Keen, 2008; Morrow, Smart and Swistak, 2022).

## Administration and compliance

As well as economic and policy changes, changes in tax administration processes and taxpayer compliance also influence revenue collections. With the available data it is difficult to evaluate how specific administrative features or compliance factors affect aggregate revenue performance. Here, we discuss the relevance of some of the evidence presented in Section 4 for revenue collections.

### Tax administration indicators

- **Filing.** Total VAT filing rates in Ghana have been relatively stable in recent years, or have even improved slightly in aggregate. However, this has included an increase in the frequency of nil-filing which acts as a drag on revenues.
- **Payment.** Among businesses who that report a positive liability, payment rates are high and have generally been consistently high, according to GRA data. There was some drop in 2020 which may have affected domestic collections in that year, but payment rates recovered quickly in the second half of the year.
- **Monitoring and audits.** The overall number of tax audits (across all tax types) varied between 4,000 and 6,000 between 2016 and 2020. Though more detailed information on the process and outcomes of these audits, and the returns for VAT specifically, is not available, this aggregate figure is lower than the number of audits recommended by some international experts. In addition, since 2017 very little additional liability has been assessed from LTO taxpayers, including zero in 2019 and 2020. More generally, recovery of assessed liabilities has remained low, in the region of 10%. Thus, there may be additional revenue potential both from expanding audit coverage and from improving returns from existing audits, and there may be a trade-off here.
- **Refunds.** VAT refunds fell from 0.3% of GDP in 2016 and 2017 to an average of 0.15% across 2019–2021, contributing to an increase in net revenue. However, this arithmetic

oversimplifies the impact of the refund system for net revenues. Analysis and international benchmarking shown in Section 4 suggest that Ghana could expect to make much higher levels of legitimate refunds than it currently does. If legitimate claims are not being refunded, this likely constrains revenues through more indirect channels, including reduced business activity and damaging incentives for compliance on B2B transactions.

## VAT withholding

VAT withholding was introduced in May 2018. The scheme initially designated 118 institutions as withholding agents (mainly government institutions, financial institutions and other large companies), which gave them the obligation to withhold 7% the taxable value of supplies made to them. Section 4 provided a detailed discussion of the design of the withholding system; here we consider the revenue implications of the mechanism since its implementation.

Overall, the scope of VAT withholding is relatively limited in Ghana – revenue remitted via VAT withholding was between 3% and 5% of gross domestic VAT collections from 2018 to 2020. However, the revenue remitted via withholding agents does not constitute the revenue impact of the mechanism. Withholding does not change overall tax liabilities – only the entity responsible for remitting the tax due – and taxpayers can reclaim withholding tax credits on their VAT returns if they have sold to withholding agents.

There are two ways in which VAT withholding can increase revenues. It may be that withholding agents withhold more VAT than is claimed as credits. This may happen if businesses which are subject to withholding are not registered for VAT, so cannot claim back credits, or if businesses which are subject to withholding forget to claim credits or underclaim credits. As discussed in Section 4, the amount of VAT withholding credits claimed in tax returns was extremely low in 2018 and 2019 when compared with total withheld VAT remitted to the GRA; however, in 2020 the reverse was true, such that interpretation becomes difficult.

The second channel by which VAT withholding can increase revenues, and the one that the scheme principally seeks to target, is by increasing tax compliance. Businesses that are subject to withholding may perceive that they are being more closely monitored by the government, and therefore reduce evasion. Withholding also reduces the total amount a firm can evade, so in effect reduces the benefits of evasion. If evasion is less profitable, the firm will evade less and therefore increase reported value added.

As discussed in Section 2, the withholding of VAT has been shown to raise revenues in a number of low- and middle-income country contexts (in Argentina by Garriga and Tortarolo, 2022; in Costa Rica by Brockmeyer and Hernandez, 2016; and in Pakistan by Waseem, 2022). In these contexts, the introduction of withholding increased tax paid by 5–10%.

As shown in Figure 4.9 in Section 4, there is a strong correlation between firm size and VAT withholding in Ghana, with over 30% of businesses in the top decile of sales reporting having some withholding credits, compared to close to 0% of businesses in the bottom decile. A simple comparison of the tax liabilities of businesses subject to withholding and businesses not subject to withholding would be indicative of the fact that larger businesses with larger tax liabilities are more likely to be subject to withholding, rather than shed light on the compliance benefits that withholding might bring.

A first approach to try to overcome this issue is to compare the rate of growth of revenues from businesses more and less exposed to the VAT withholding regime. We can also compare trends over time in the growth in revenue for businesses that are more or less exposed to withholding (based on the number of months they report withholding credits). Doing this, we find that, compared to those businesses reporting withholding credits in fewer than seven months after the introduction of the scheme, those that reported credits in 12 or more months saw steadier and marginally faster growth in tax payments. However, they also saw faster growth in tax payments prior to the withholding regime being introduced, which suggests the two groups may not be properly comparable (and may have continued to grow at different rates even in the absence of the withholding regime). This could reflect differences in their sizes, sectors and other characteristics.

In our second approach, we use the technique known as fixed-effects regression. This effectively asks whether having withholding credits in a particular month increases firm A's reported tax liability, when compared to firm A's average tax liability across all months. This controls for the fact that businesses with larger average sizes, and in different industries, are more likely to be subject to withholding. The full results are in Table A.3.[55]

The results in Table A.3 show that reporting any withholding credits in a given month is associated with a substantial increase in tax liability of 51.8%, compared to the average in all

[55] Formally, the equation of interest is $\log(tax\ liability)_{it} = \beta \cdot DepVar_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$, for firm $i$ and month $t$, where $DepVar_{it}$ is either a binary variable for declaring any withholding credits, or the log of withholding credits.

months. Conditional on having withholding credits, a 1% increase in withholding credits is associated with an additional 0.36% increase in tax liability.

These numbers have to be taken with substantial caution, as they are much larger than estimates for other countries. It could be that although we are controlling for the average size of the firm across the entire sample, firm size fluctuates from month to month. There are only a limited number of withholding agents, which are mostly government agencies and large businesses. Gaining a contract from government or a large firm could lead to a boost in real economic activity in that month, leading to a correlation between withholding credits and tax liability. To address this concern, we look at the effect of withholding on taxable sales and taxable purchases. If the effect of withholding on tax liability was being driven by businesses which are larger than their historical average being more likely to sell to withholding agents, we would expect both sales and purchases to grow at the same rate. On the other hand, if higher reported revenues from businesses which declare withholding credits were driven purely by compliance effects, we would expect reported sales to increase by more than reported purchases, as tax evaders generally underreport sales and overreport purchases.

The results in Table A.4 in the Appendix suggest that declaring any withholding credits is associated with a 38% increase in reported taxable sales, but only a 7.7% increase in reported taxable purchases. Conditional on reporting any withholding credits, a further 1% increase in withholding credits is associated with a 0.34% increase in taxable sales, and a 0.05% increase in taxable purchases. The fact that sales grow faster than purchases suggests that there is some compliance effect, but the fact that purchases grow at all suggests that some of the result is being driven by businesses which are temporarily larger being more likely to report to withholding agents. One potential issue with this analysis is that input purchases may not take place in the same month as associated sales, but similar results are found when we look at the relationship between withholding credits, sales and input purchases on an annual basis (which should be less affected by such timing issues).

Another issue could be that businesses increase compliance in months when they declare withholding credits, and offset that with reduced compliance when they do not declare withholding credits. The results in Table A.5 in the Appendix suggest that this is unlikely to be significant. Column 1 in Table A.5 shows that reporting withholding credits in the current month, conditional on whether the firm reports withholding credits in the next month, is not associated with a change in reported tax liability in the next month. This also holds for tax liability in the previous month (column 2). The effect of having any withholding credits is also substantial when looking at annualised rather than monthly data (column 3), suggesting that increased compliance during withholding months is not offset by reducing compliance in the rest of the year.

# 6. Conclusion

This report aims to provide a systematic overview and analysis of Ghana's VAT system, covering policy, administration and revenue trends, the first such comprehensive exercise since the VAT system was introduced 25 years ago.

Assessing Ghana's VAT policy and administration practices first requires an understanding of the idealised textbook VAT system, and evidence from elsewhere on how to maximise compliance with the system by taxpayers, both summarised in Section 2. Departures from these policies and administrative practices are not necessarily a problem – indeed, they may be sensible responses to the economic, institutional, political and technological context of Ghana. But where Ghanaian policy and administrative practice – described and analysed in Sections 3 and 4 – differ from these benchmarks, it is worth considering whether reforms are needed to bring practices more into line with international benchmarks.

In relation to VAT policy design, our analysis has found that:

- **The presence of the levies which are unreclaimable** creates a unique indirect tax system in Ghana that combines a VAT with a turnover tax. This combination gives Ghana one of the highest combined tax rates in sub-Saharan Africa. The unreclaimability of the levies deviates substantially from standard VAT design, as they encourage businesses to shorten production chains to avoid paying the levies multiple times, and they potentially weaken the self-enforcement properties of a VAT. The levies have also complicated the administration of the VAT system, as taxpayers need to separately file and pay the standard VAT and the levies. Such costs need to be considered alongside the fact that for a given tax rate and level of sales, an unreclaimable levy will raise more revenue than a reclaimable standard VAT.
- **The VAT Flat Rate Scheme (VFRS)** is also unusual in that it was, until recently, available to all wholesalers and retailers, regardless of their size. This created a distortion in which certain businesses were able to pay a tax rate of 3% on their sales, compared to an average net tax rate on sales of 14% in the standard VAT system (including levies, and after reclaim of input VAT). The VFRS has also complicated the administration of VAT, with evidence suggesting that many businesses switch back and forth between the standard VAT scheme and the VFRS. The recent reform to limit the VFRS to businesses below GHS 500,000 is a positive step, and will bring the scheme more into line with

small business sales taxation in similar countries. There may, however, be scope for further reform.

- **VAT exemptions** in Ghana are widespread, with almost half of all household consumption exempt from VAT. VAT exemptions have been shown to be a poor way to redistribute to poorer households – the richest 10% of households in Ghana spend 14 times more on exempt goods and services than the poorest 10%. VAT exemptions also add substantial inefficiency to the VAT system, as businesses selling exempt goods cannot reclaim VAT on their inputs, encouraging them to reduce purchases from other businesses. In contrast, Ghana has limited reduced rates or zero rates (except for exports).

In relation to VAT administration, our analysis has found that:

- **The number of registered taxpayers** is similar to the African average, but has remained flat for some time. Among registered taxpayers, 60–70% file a return in a given month. **Nil-filing** is becoming more common, rising to 30% of all filed returns in recent years. The reasons behind this increase in nil-filing are not well understood, and there may be scope to develop more consistent responses to nil-filing across TSCs.
- **VAT registration** is potentially complicated by the presence of separate business and tax registration processes managed by the Registrar General's Department and Ghana Revenue Authority (GRA), respectively. **Deregistration** processes are generally perceived to be well managed but the system is challenged by the prevalence of disappearing taxpayers and the limited incentives to facilitate genuine deregistration among tax offices.
- **The VAT system is becoming increasingly digitalised.** Many taxpayers – especially the largest ones – are already expected to file tax returns electronically, make payments electronically and create electronic invoices. The GITMIS is also being used to process and store all domestic tax returns. Evidence from other countries shows that investment in training and the skills of tax authority staff is necessary to maximise the returns of investment in new technology.
- **Audits** by the GRA uncover large amounts of potential revenue (more than GHS 800 million in 2019), but only 8–11% of these liabilities are actually recovered. There is scope to evaluate the effectiveness of audits more systematically. Conducting regular randomised audits – which are commonplace in other countries – could also help the GRA to better understand the overall level of VAT evasion.
- **VAT withholding** currently plays a relatively small role in Ghana, with revenues remitted by withholding agents accounting for 3–5% of gross VAT collections. The 118 institutions originally designated as collection agents in May 2018 withhold 7% of the value of sales made to them. A withholding rate of 7% means a higher share of output

VAT is withheld than at the point of policy design, due to the standard rate decreasing from 17.5% to 12.5%. This may have contributed to increasing the administrative complexity of the system, as businesses subject to withholding are 4–5 percentage points more likely to be in a refund position. However, there is tentative evidence that VAT withholding has contributed to increased revenues, perhaps because it makes it harder for businesses to hide transactions from the tax authorities.

- **The process behind VAT refunds** is somewhat opaque. Aggregate refunds are 5–7% of total net VAT revenue, which is low compared to other African countries and less than what would be expected given the stock of credits reported in VAT declarations. There is scope to improve understanding of, and transparency around, the refund process with the collection of more systematic data on refund applications, processing times and payments.

**VAT revenue performance has been disappointing in recent years**. As a share of GDP, VAT and levies revenues have fluctuated between 3.0% and 3.5% of GDP, despite measures expected to raise revenues, and rising GDP per capita being associated with higher tax-to-GDP ratios in other low- and middle-income countries. Revenues are also low compared to the rest of Africa, despite the high combined VAT and levies rate.

Section 5 seeks to understand the drivers of VAT performance, including economic performance and structural change, tax policy and tax administration. Our key findings are:

- **Poor VAT revenue performance goes back over 15 years.** After increasing significantly during the early 2000s (from 2.3% of GDP in 2000 to 3.4% of GDP in 2005), Ghana's VAT revenues have stagnated as a share of GDP: despite substantial increases in the overall VAT and levies rate over the last 17 years, VAT revenues still amounted to only 3.7% of GDP in 2021. Corporate income tax revenues have performed substantially better, although since 2012, growth in personal income tax receipts has also slowed.
- **Investment- and export-led growth has not been conducive to VAT revenue growth**. Exports and investment grew by around 50% in real terms between 2013 and 2021, compared to 25% growth in household consumption and 16% growth in imports. This matters because while VAT is charged on household consumption, including imported consumer goods, exports are subject to a zero rate of VAT, and VAT can be reclaimed on business investment. Measured as a share of consumption, VAT revenues have increased, but the VAT C-efficiency index, which accounts for increases in Ghana's VAT rate, has stagnated. This suggests that the growth in larger businesses and efforts to improve administrative capacity have not helped the GRA to collect a

higher share of potential VAT revenues – at least based on the most recent year the data used in our analysis allow.

- **The discount policy for imported goods potentially reduced VAT and levy revenues on imported goods by up to GHS 1.6 billion in 2019 alone.** Lower import VAT does seem to have led to lower VAT reclaims, but these offset only around one-eighth to one-sixth of the fall in revenues collected at the import stage. This may partly reflect an interaction of this policy with the VFRS: wholesalers and retailers operating under this scheme could not reclaim import VAT anyway.
- **Other policies are likely to have reduced revenues, or raised less than might have been expected prior to implementation.** The VFRS is likely to have reduced revenues because the effective tax rate under it is lower than that under the standard rate of VAT for all businesses since the levies were made unreclaimable in 2018 – although higher reported sales, and higher filing rates for businesses in the VFRS scheme, offset some of these costs. In contrast, making levies unreclaimable may have modestly increased revenues in the short term, although reductions in reported sales likely offset a large part of the potential revenue gains. Finally, while there is some evidence that withholding is associated with an improvement in tax compliance, a note of caution is required because of the difficulty in disentangling increases in tax payments by businesses subject to withholding that result from improved compliance from other changes (such as the fact that transacting with government agencies and other withholding agents is likely to boost sales).
- **A thorough assessment of administrative processes is beyond the scope of this report, but administrative performance appears to be a mixed picture and does not appear to have noticeably worsened in recent years.** VAT filing rates have slightly improved, although the frequency of nil-filing has increased, for example. VAT payment rates have been generally high, although they dipped in the first half of 2020. VAT audits detect significant amounts of unpaid tax, but the GRA manages to recover just 10% of this from taxpayers.

Our ability to fully explore the drivers of revenue trends and performance has been hindered to some extent by data availability, consistency and coverage. While the lack of appropriate control groups unaffected by the reforms is perhaps the main factor making evaluation of the levies, VFRS and withholding policies difficult, data have also been a challenge: high-quality data are vital for policy analysis and policymaking, as well as for tax administration. Continued investments in, and use of, both macroeconomic data (such as supply and use tables) and operational data at the taxpayer level would support more in-depth analysis of some of the issues identified. Updating analysis of the VAT gap, refunds, audits and VAT withholding should be a priority when such data are available.

Based on the findings outlined above, the report's authors have shared policy and administration reform options with the Government of Ghana. Any reforms should be subject to detailed policy and appraisal, consultation with key stakeholders, and should be considered alongside other factors which determine Ghana's medium-term fiscal situation.

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# Appendix

Box A.1: Data

Throughout this report we draw on a number of administrative, macroeconomic and secondary datasets to support the analysis of the design of the tax system (Section 3), the evaluation of the VAT administration system (Section 4) and the analysis of the drivers of VAT revenues raised from Ghana's VAT and levies system (Section 5). The tables below summarise the various datasets used in this report, their timelines and frequency, their source(s), and – where relevant – provide some additional information on their coverage and quality.

At the aggregate level, data come from the Ghana Revenue Authority. Importantly, some firm-level tax data are also available from the trips™ system; this allows us to study filing behaviour and tax payments at the individual firm level. Consignment-level customs data were also extracted from the GCMS system to analyse import VAT and levy patterns and trends. It is important to note, however, that there are significant gaps in the data used in this report. For instance, while we had access to more complete aggregate administrative data on filing behaviours and audit assessments from the MTOs and STOs over the period covered in the analysis presented in the report, this was not the case for the LTO.

**Administrative tax data provided by the GRA and/or MoF**

| Data description | Date(s) and frequency | Notes on coverage and quality | Source |
|---|---|---|---|
| VAT and levies rates in Ghana | 2002–2021; annual | | GRA; MoF |
| VAT registration thresholds in Ghana | 2000–2021; annual | | GRA |
| Aggregate revenue data, by tax heads | 2001–2021; annual | | GRA; MoF |
| Aggregate data on VAT, NHIL, GETFL and CHL collections, disaggregated by source | 2000–2021; annual | | GRA |
| Aggregate VAT, NHIL and GETFL collections data, disaggregated by sector | 2015–2019 | | GRA |
| Number of registered VAT taxpayers, returns filed and value of payments, disaggregated by tax type | 2014–2022; monthly | Out of the total returns filed, the GRA derives the number of tax returns that are NIL, associated with payment, and associated with a credit. | GRA |
| Number of registered VAT taxpayers, returns filed and value of payments, disaggregated by tax office | 2015–2021; monthly | Out of the total returns filed, the GRA derives the number of tax returns that are NIL, associated with payment, and associated with a credit.<br>There are some inconsistencies between the total returns filed in each tax office and the total number of VAT-registered taxpayers in the tax office at a given point in time. | GRA |

| | | | |
|---|---|---|---|
| Number of VAT-registered taxpayers, by tax office | 2017–2020; monthly | | GRA |
| Micro taxpayer-level data on VAT, NHIL and GETFL returns and associated payments | 2016–2020; monthly | These data do not cover the universe of all VATable businesses in a consistent way over time. This reflects the fact that the roll-out of trips™ was staggered. | GRA (trips™) |
| Aggregate VAT audits data (focusing on assessments raised, tax payments and outstanding tax payments), disaggregated by tax office | 2016–2020; annual | These data are incomplete for the LTO. | GRA |
| Aggregate VAT audits data (focusing on number of audits brought forward, audits initiated in the current year, total audits outstanding, total audits completed and audits carried forward), disaggregated by audit type | 2016–2021; annual | | GRA |
| Aggregate data on refund payments, disaggregated by tax type | 2019–2021; monthly | | GRA |
| Aggregate data on refund payments, disaggregated by industry | 2019–2021; monthly | | GRA |
| Aggregate data on indirect tax refund payments, disaggregated by source | 2011–2021; monthly | | GRA |
| Consignment-level customs data at the 10-digit HS code level | 2016–2019; monthly | This is very representative of imports registered at the port. | GRA (GCMS) |

| | | | |
|---|---|---|---|
| Qualitative evidence capturing GRA staff views on current VAT administrative processes compiled during the VAT administration workshop held in March 2022 | n/a | Notes were produced following a two-day workshop attended by 12 GRA staff and eight MoF staff. The information collected was subsequently validated with GRA. | GRA, MoF, IFS |

### Macroeconomic and secondary data

| Data description | Date(s) and frequency | Source |
|---|---|---|
| Key macroeconomic indicators (e.g., GDP; GDP deflator) | 2000–2021 | Bank of Ghana; GSS |
| Data on GDP components including household final consumption expenditure, investment, exports and imports | 2013–2021 | GSS |
| Sectoral GDP data | 2013–2019 | GSS |
| Ghana Social Accounting Matrix (SAM) | 2015 | GSS |
| Household-level purchases of VAT exempt and non-exempt items | Data collected 2016–2017; main report produced in 2019 | 2016/17 Ghana Living Standards Survey Round 7 (GLSS 7), available from GSS |
| Business-level sales and purchases by exempt and VATable businesses | Data collected in 2015; summary report produced in 2017 | Integrated Business Establishment Survey II (IBES II), available from GSS |
| International comparative data on VAT registration thresholds | 2022 | IMF, KPMG, EY and PwC |
| Number of VAT-registered taxpayers across countries in Africa | 2019 | ATAF |
| Aggregate data on VAT refund payments and VAT revenues, across countries in Africa | 2019 | ATAF |
| Aggregate data on VAT refund payments | 2000–2021; annual | OECD, MoF, GRA, ATAF |
| C-efficiency estimates for African countries | 2017 | IMF |

Box A.2. Taxable supplies clarified in the Value Added Tax Act

- The supply or import of goods or services
- The processing of data or supply of information or similar service
- The supply of staff
- The acceptance of a wager or stake in any form of betting or gaming, including lotteries and gaming machines
- The making of gifts or loans of goods
- The leasing or letting or goods on hire
- The appropriation of goods or services for personal use or consumption by the taxable person or by any other person
- The sale, transfer, assignment, or licensing of patents, copyrights, trademarks, computer software, and other proprietary information
- Exports of non-traditional products

Source: Value Added Tax Act, 2013 (Act 870).

Box A.3. Exemptions for relief supplies in the Value Added Tax Act

- The President of the Republic of Ghana
- Goods imported for the official use of any Commonwealth or Foreign Embassy, Mission or Consulate
- Goods imported for the use of a permanent member of the Diplomatic Service of any Commonwealth or Foreign Country that is exempted by Parliament from the payment of Customs duties
- For the use of an international agency or technical assistance scheme where the terms of the agreement made with the Government and approved by Parliament include exemption from domestic indirect taxes
- Emergency relief items approved by Parliament
- VAT-registered manufacturers for raw materials at importation, subject to the condition that: (i) the manufacturer is a member in good standing of the Association of Ghana Industries; (ii) the manufacturer has submitted all previous tax returns and paid the tax penalties and interest from previous tax periods, if any; (iii) the Commissioner-General is satisfied that the manufacturer has met the conditions in (i) and (ii) and other compliance requirements; (iv) the imported raw materials will be applied solely and exclusively for the manufacturing operations of the relief beneficiary

Source: Value Added Tax Act, 2013 (Act 870).

### Box A.4. Calculating an optimal VAT registration threshold in Ghana

Keen and Mintz (2004) present a model that yields a simple formula for calculating the optimal VAT registration threshold, trading off the costs and benefits of additional revenue that would be gained in a static framework. Using this formula with simple calibrated and assumed values facilitates a computation for Ghana, though the importance of assumptions in driving these results means that any result should be scrutinised and interpreted with caution. The formula suggested is as follows:

$$Threshold = \frac{\delta A + C}{(\delta - 1)\tau N}.$$

- $\delta$ is the *marginal cost of public funds* (MCF). The optimal threshold is decreasing in this term. For VAT in Ghana, Auriol and Warlters (2012) estimate an MCF of 1.05, close to the average of 38 included countries from Africa.
- $A$ is *administrative costs* to the tax authority per business per year to collect VAT, and the optimal threshold is increasing in this term. This could be estimated under some assumptions with information on the GRA's budget allocation.
- $C$ is *compliance costs* for each VAT-registered business per year, and the optimal threshold is increasing in this term. This could be estimated under some assumptions with information on the time and resources required to comply with VAT in Ghana.
- $\tau$ is the *VAT rate*. The optimal threshold is decreasing in this term. In Ghana the VAT rate is current 12.5%, but the 'total sales tax rate' is 19.25% (0.1925).
- $N$ is the *ratio of value added to sales*. The optimal threshold is decreasing in this term. From IBES data, the mean and median for this term are 43.7% (0.437) and 44.5% (0.445), respectively. The 2015 Social Accounting Matrix yields a figure of 29% at the aggregate level.

This formula provides a basis for considering the level of Ghana's VAT threshold. For instance, taking $\delta$ as 1.05, $A$ as GHS 500, $C$ as GHS 500, $\tau$ as 0.1925 and $N$ as 0.5 yields

$$Threshold^* = \frac{1.05\times500+500}{(1.05-1)(0.1925\times0.5)} = \text{GHS } 212{,}987.$$

This calculation is only illustrative but provides a useful basis for further study.

### Box A.5. Illustrating the cascading effect of input taxes

Here we show the cascading effect of the non-reclaimable taxes such as the NHIL, GETFL and CHL, using the illustration in Keen (2013). For illustrative purposes, we make the following simplifying assumptions:

- There is a single chain of production, comprising $N$ stages.
- Each producer spends the same fraction $\alpha$ of its pre-tax costs purchasing, for use as an input, the output of the previous stage (paying the tax-inclusive price).
- There are constant returns to scale at all production stages.
- All goods are sold at tax-inclusive cost.
- The input price at the initial stage is fixed.
- All tax-induced cost increases are exactly passed on into producers' selling prices.

First, consider a situation where there is no substitution in production at any stage of production except the last stage. So, at the first two stages, input taxation would not create any distortion in input choices but would add to tax-inclusive production costs at every stage. These would accumulate to amplify the tax-induced increase in input prices faced at the final stage. In the end, the effective tax rate will be higher than the nominal tax rate as it reflects not only the taxation of inputs directly used in that sector but also the taxation of those used to produce these inputs. The effective tax rate increases as the number of prior stages rises as shown in the table below. For instance, with just one prior stage of production, a nominal tax rate of 2.5% becomes an effective rate of 3.8%. The higher the effective tax rate, the higher the welfare losses due to the tax, implying that in cases where there are many production stages the welfare loss due to such a tax becomes quite sizeable. Keen (2013) shows that the deadweight loss increases with the square of the effective tax rate.

**Effective tax rates with cascading and no substitution in production**

| Tax rate (%) | Number of production stages | | | |
|---|---|---|---|---|
| | **2** | **4** | **6** | **∞** |
| **2.5** | 3.8 | 4.8 | 5.0 | 5.1 |
| **5** | 7.6 | 9.7 | 10.3 | 10.5 |
| **15** | 23.6 | 31.4 | 34.0 | 35.3 |
| **20** | 32.0 | 43.5 | 47.7 | 50.0 |

Note: Figures are percentages; assume $\alpha = 0.5$.
Source Keen (2013).

Allowing for input substitution at all stages of production can lead to a larger aggregate welfare loss as inefficiencies now arise at each stage of production. But the possibility of substituting away from taxed inputs at one stage may reduce the aggregate welfare loss if it leads to lower input prices and hence

less distortionary effect for producers at later stages. Keen (2013) notes that the deadweight loss falls if the share of taxed inputs in total production costs is increased beyond a certain point.

### Box A.6. VFRS, standard VAT and business value added

**Set-up**

- Business A is a manufacturer and registered under the standard VAT system.
- Business B is a retailer and purchases goods from business A, before selling these to final consumers.
- Business B requires a fixed amount of inputs (given by $X$) to GHS 1 of output. Thus, value added is fixed as $Z = 1 - X$.
- The VFRS rate is 3% and the total standard VAT rate is 17.5% (as at the time of VFRS implementation). Assume business B sells GHS 1,000 of goods to final consumers.

**Scenario 1: Business B is registered for standard VAT**

Suppose that business B is registered under the standard rate VAT system and purchases its inputs from business A. Business B then pays $0.175 \times 1{,}000 \times X$ of VAT on inputs, and charges $0.175 \times 1{,}000$ of VAT on outputs. It can reclaim $0.175 \times 1{,}000 \times X$ of VAT on inputs, giving a net VAT liability of GHS 175.

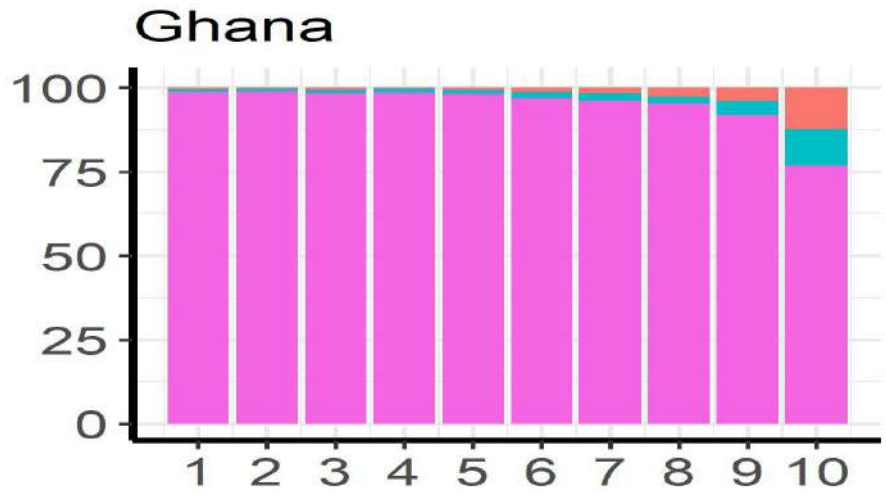
**Scenario 2: Business B is registered for VFRS**

Suppose that business B is registered under the VAT Flat Rate System and purchases its inputs from business A. Business B then pays $0.175 \times 1{,}000 \times X$ of VAT on inputs, and charges $0.03 \times 1{,}000$ of VAT on outputs. It can reclaim no input tax, giving a net VAT liability of $30 + 175X$, or $30 + 175(1 - Z)$.

**Implications**

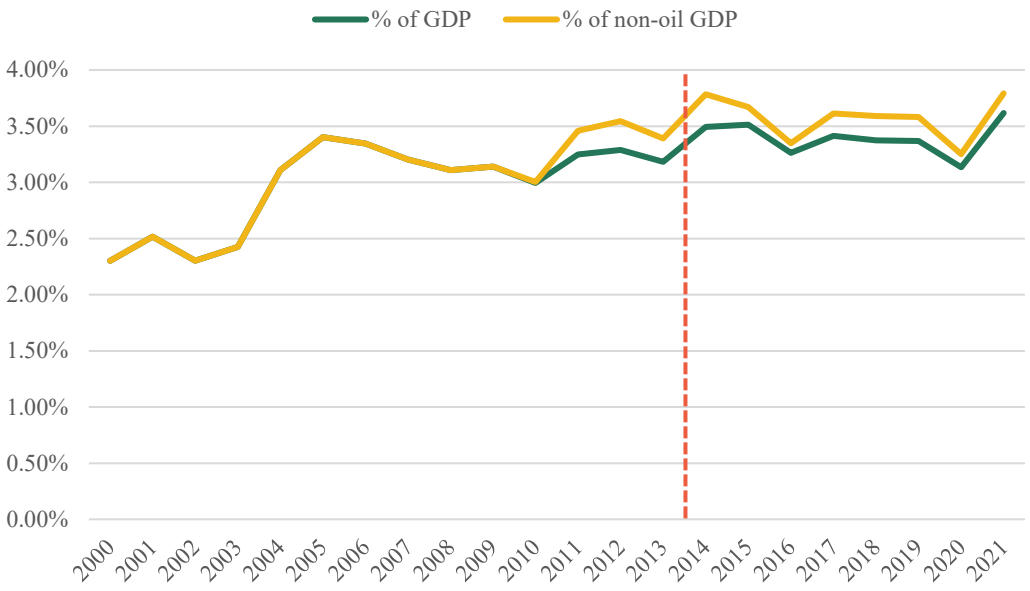
This makes it clear that for a retailer that can choose between VFRS and standard VAT, the tax burden under VFRS depends on the level of value added of a business. In particular, higher levels of value added (or conversely, lower levels of use of (taxable) inputs), make the VFRS scheme more desirable. Based on the simple set-up above, which abstracts from important considerations such as accumulating tax burdens in the supply chain, a retailer would prefer registering for VFRS if value added $Z$ is greater than 17.1%.

## Figure A.1. Share of reported sales by tax status in standard VAT returns




Note: Figure shows share of aggregate reported sales attracting different VAT treatments, by decile of total reported sales. Pink = full rate sales; blue = exports; red = exempt sales.
Source: Ghana Revenue Authority.

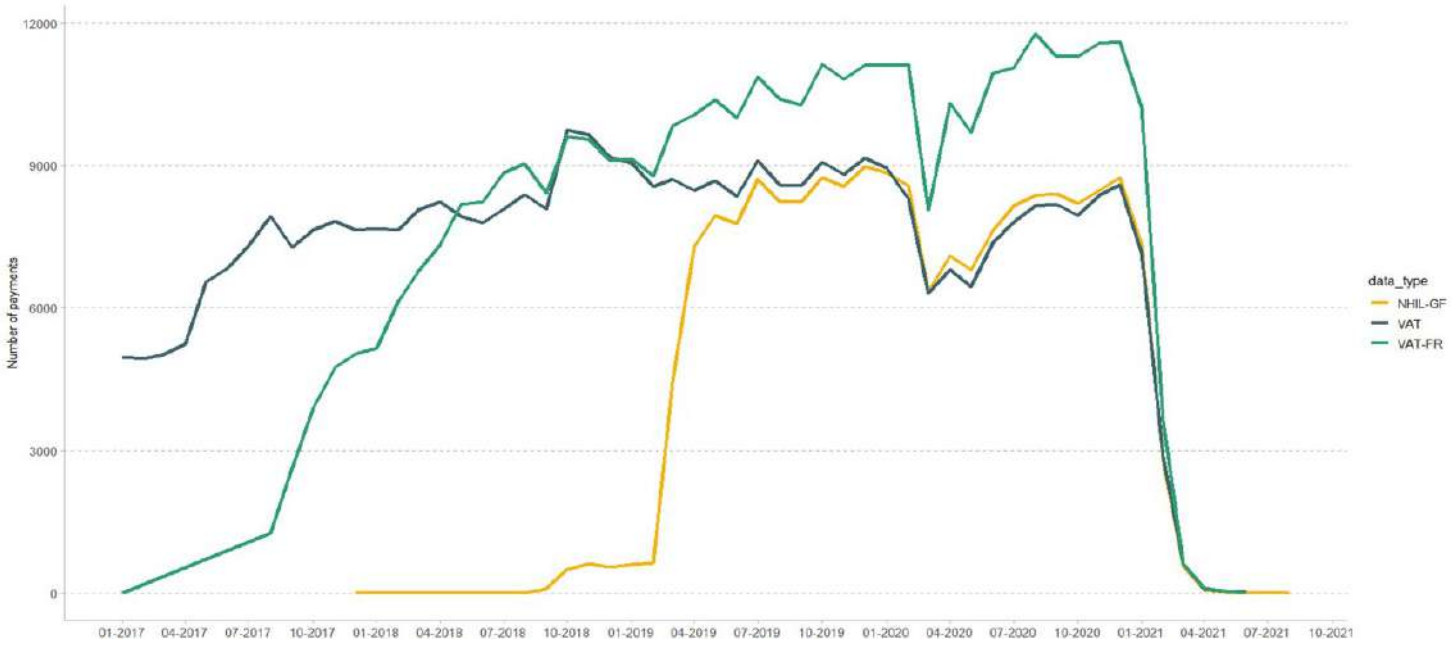
## Figure A.2. Comparison of VAT-to-GDP ratios for total GDP and non-oil GDP




Note: Underlying revenue series as in Figure 5.1 see figure notes for details.

Source: Ghana Revenue Authority and Ghana Statistical Service.

## Figure A.3. Number of standard VAT, VFRS and NHIL/GETFund returns by date




Note: Total number of returns in VAT payments data. NHIL and GETFL were formally introduced in August 2018.

Source: Authors' calculations based on trips™ data.

## Table A.1. Effect of having withholding credits on likelihood of being in a refund position

| | In credit position (0/1) | |
|---|---|---|
| Has any withholding credits (0/1) | 0.059*** | |
| | (0.005) | |
| Log withholding credits, GHS | | 0.032*** |
| | | (0.005) |
| Number of observations | 155,686 | 5,992 |
| $R^2$ | 0.454 | 0.540 |
| Firm fixed effects | X | X |
| Year-month fixed effects | X | X |

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

*Note*: Calculated for standard VAT taxpayers excluding NHIL and GETFL payments. A firm is defined as being in a credit position if tax credits exceed tax liabilities (excluding NHIL/GETFL) in a given month. The right-hand column is conditional on having any withholding credits. Regression based on an unbalanced panel of monthly non-nil returns between May 2018 and December 2020, using robust standard errors.

*Source*: Authors' calculations based on trips™ data.

### Table A.2. Effect of VFRS on tax liability

| | Log monthly tax payment | Log monthly tax payment | Positive payment | Log monthly tax payment × annual number of payments |
|---|---|---|---|---|
| In VFRS | –0.017*** | | | |
| | (0.006) | | | |
| Dual-filer | | 0.572*** | 0.025*** | 0.661*** |
| | | (0.017) | (0.005) | (0.018) |
| Permanent switch to VFRS | | –0.043*** | 0.072*** | 0.013* |
| | | (0.007) | (0.002) | (0.007) |
| Temporarily in standard VAT | | 0.048*** | -0.030*** | 0.063*** |
| | | (0.012) | (0.004) | (0.012) |
| Temporarily in VFRS | | –0.119*** | 0.006 | –0.079*** |
| | | (0.011) | (0.004) | (0.012) |
| Number of observations | 319,051 | 319,051 | 496,345 | 319,051 |
| $R^2$ | 0.907 | 0.908 | 0.374 | 0.898 |

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: All regressions include firm and month fixed effects. See main text for classifications into each category. Robust standard errors in parentheses. Calculated on an unbalanced panel of businesses that are present before the introduction of the VFRS in July 2017. Tax payment for standard VAT businesses includes VAT, NHIL and GETFL payments. The excluded category is businesses that are permanently in standard VAT.

Source: Authors' calculation using trips™ declaration data.

## Table A.3. Effect of reporting withholding credits on tax liability

| | Log monthly tax liability | Log monthly tax liability |
|---|---|---|
| Has any withholding credits | 0.518*** | |
| | (0.017) | |
| Log withholding credits | | 0.364*** |
| | | (0.019) |
| Number of observations | 241,259 | 5,706 |

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Regressions include firm and month fixed effects. Regression on an unbalanced panel of businesses paying the standard rate (excludes NHIL and GETFL payments). Logs of tax liability necessarily only include businesses with positive tax liabilities (around 50,000 observations are excluded), and log of withholding credits only includes observations with positive withholding credits (5,700 observations remain). Tax liability is net VAT = output VAT – input VAT, before a firm deducts any withholding credits. Robust standard errors in parentheses.

Source: Authors' calculation using trips™ declaration data.

## Table A.4. Effect of reporting withholding credits on reported sales and reported purchases

| | Log monthly taxable turnover | Log monthly taxable purchases | Log monthly taxable turnover | Log monthly taxable purchases |
|---|---|---|---|---|
| Has any withholding credits | 0.374*** | 0.078*** | | |
| | (0.016) | (0.026) | | |
| Log withholding credits | | | 0.340*** | 0.054*** |
| | | | (0.018) | (0.019) |
| Number of observations | 268,115 | 163,999 | 5,946 | 3,528 |

* p < 0.1, ** p < 0.05, *** p < 0.01

Note: Regressions include firm and month fixed effects. Regression on an unbalanced panel of businesses paying the standard rate (excludes NHIL and GETFL payments). Logs necessarily only include those with positive amounts. Tax liability is net VAT = output VAT – input VAT, before a firm deducts any withholding credits. Robust standard errors in parentheses.

Source: Authors' calculation using trips™ declaration data.

## Table A.5. Dynamic effects of withholding

| | Log monthly tax liability, $T+1$ | Log monthly tax liability, $T-1$ | Log yearly tax liability |
|---|---|---|---|
| Has any withholding credits, $T$ | 0.022 | 0.026 | |
| | (0.020) | (0.020) | |
| Has any withholding credits, $T+1$ | 0.498*** | | |
| | (0.020) | | |
| Has any withholding credits, $T-1$ | | 0.484*** | |
| | | (0.021) | |
| Has withholding credits at some point in the year | | | 0.585*** |
| | | | (0.045) |
| Number of observations | 229,540 | 229,353 | 37,272 |

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Regressions include firm and month (year in column 3) fixed effects. Regression on an unbalanced panel of businesses paying the standard rate (excludes NHIL and GETFL payments). $T-1$ and $T+1$ refer to the next and previous declaration made by a given firm, which may not correspond to the next/previous month if a firm does not file every month. Logs of tax liability necessarily only include businesses with positive tax liabilities (around 50,000 observations are excluded). Tax liability is net VAT = output VAT – input VAT, before a firm deducts any withholding credits. Robust standard errors in parentheses.

Source: Authors' calculation using trips™ declaration data.